

**NEW HAVEN HARBOR
CONNECTICUT
NAVIGATION IMPROVEMENT PROJECT

INTEGRATED FEASIBILITY REPORT AND
ENVIRONMENTAL IMPACT STATEMENT**

**SUPPORTING TECHNICAL DOCUMENT #1
AECOM SEDIMENT EVALUATION**



Final Report for Dredged Material Suitability Testing and Evaluation in the New Haven Harbor FNP

United States Army Corps of Engineers

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Appendix D Backup Bulk Sediment Chemistry and Equipment Blank Laboratory Data

Appendix E Backup Biology Laboratory Data

Acronyms

ABS	Aquatic BioSystems, Inc.
ARO	Aquatic Resource Organisms
AWQC	Ambient Water Quality Criteria
CLDS	Central Long Island Sound Disposal Site
COC	Chain of Custody
CWA	Clean Water Act
DO	Dissolved Oxygen
DGPS	Differential Global Positioning System
DM	Dredged Material
EC50	Median Effective Concentration
EPA	U.S. Environmental Protection Agency
ESI	EnviroSystems, Inc.
FNP	Federal Navigation Project
FSP	Field Sampling Plan
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatography /Mass Spectrometry
LMW	High Molecular Weight
ICP/MS	Inductively Coupled Plasma Mass Spectrometry
LC50	Median Lethal Concentration
LCS	Laboratory Control Sample
LMW	Low Molecular Weight
MDL	Method Detection Limit
MLLW	Mean Lower Low Water
MPRSA	Marine Protection, Research, and Sanctuaries Act
NAE	U.S. Army Corps of Engineers, New England District
NOAA	National Oceanic and Atmospheric Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RIM	Regional Implementation Manual
RL	Reporting Limit
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SDS	Sodium Dodecyl Sulfate
SOW	Statement or Scope of Work
SPP	Suspended Particulate Phase
SRM	Standard Reference Material
TOC	Total Organic Carbon
USACE	U.S. Army Corps of Engineers

1. Introduction

The New England District (NAE) of the US Army Corps of Engineers (USACE) is currently preparing a feasibility study for improvements to the New Haven Harbor Federal navigation project (FNP). Aspects of the study include: deepening the main ship channel from 35 feet to a depth up to 42 feet at mean lower low water (MLLW); widening the main ship channel from 400 feet to 500 feet inshore of the breakwaters and to 600 feet on the seaward side; widening the channel bend at Southwest Ledge from 560 feet to a minimum of 780 feet; straightening the channel bend downstream of the existing turning basin; revising the location of the turning basin; and deepening the turning basin from 35 feet to a depth up to 42 feet MLLW. These combined actions would require the mechanical removal of approximately 4,500,000 cubic yards of sediment and 55,100 cubic yards of rock. To the extent practical, suitable material will be beneficially reused for beach nourishment, marsh creation, upland construction projects, and to cover historic dredged material mounds in Long Island Sound. The remainder of the material is expected to be suitable for unconfined placement at the Central Long Island Sound Disposal Site (CLDS).

The purpose of the sampling effort described in this report was to characterize the material that would be produced by the proposed improvement dredging project as well as to aid in the USACE's evaluation of this material for the various placement alternatives. In support of this goal, sediments from 26 core locations within New Haven Harbor were selected to undergo physical, chemical, and biological testing in accordance with the evaluation requirements set forth in the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (U.S. Environmental Protection Agency [EPA]/USACE, 2004). A work plan (AECOM, 2017a – Appendix A) was prepared to guide this effort in response to the project requirements identified by NAE in the Statement of Work (SOW) dated 31 May 2017. This report summarizes the methodology used for field sampling and laboratory analysis as well as the results of testing which will be used by NAE to generate a dredged material suitability determination.

1.1 Relevant regulations/standards

Data for the dredged material suitability evaluations under the Marine Protection, Research, and Sanctuaries Act (MPRSA) and Clean Water Act (CWA) have been collected based on quality standards outlined in *QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations* (EPA, 1995). Evaluations have followed guidance provided in the Green Book (EPA/USACE, 1991), the *Inland Testing Manual* (EPA/USACE, 1998), and the *Regional Implementation Manual* (RIM) (EPA/USACE, 2004).

2. Methods

Field and laboratory methods are detailed in the project work plan (AECOM, 2017a), comprised of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). These documents are included in Appendix A. Brief summaries of the methods used are included in the following subsections.

2.1 Field sampling

Sample locations were established by NAE and distributed throughout proposed project area in New Haven Harbor. Final sampling locations are depicted in Figures 1 and 2. Appropriate volumes of dredge area sediment and water were collected at each of 26 harbor stations for the physical, chemical, and biological testing from August 8 – 17, 2017 as described in the sections below. Sediment and water from the CLDS Reference Site (CLDS-Ref) were also collected to facilitate the evaluation of the dredge area material for placement at that location. A full field report (AECOM, 2017b) describing the sampling effort is provided in Appendix B.

Vessel positioning and the determination of actual core sample locations were accomplished utilizing a Differential Global Positioning System (DGPS) with an attempt to collect each core within 3 meters or less of the target location. Local National Oceanic and Atmospheric Administration (NOAA) tide data was obtained from Station 8465705 in real time in order to calculate tidal height in feet above MLLW. Table 2 of the Field Report (AECOM, 2017b) lists the actual coring positions for each coring attempt.

Field observations including penetration depth, material recovery, visual descriptions, and core photographs are also provided in the Field Report (AECOM, 2017b).

Table 1 Sample collection dates for physical and chemical testing

Sample ID	Date	Horizon	Water Depth (MLLW)	Easting, X (CT FT)	Northing, Y (CT FT)	Physical tests	Metals	PAHs, TOC	Pesticides, PCB Congeners
Sediment Samples									
NHH-A-TOP	8/11/2017	0 - 2.2'	-28.7	955707.36	641917.44	x	x	x	x
NHH-A-BOTTOM	8/11/2017	2.2 - 9.9'	-28.7	955707.36	641917.44	x			
NHH-B	8/11/2017	0-4.2'	-39.8	955995.61	642051.34	x	x	x	x
NHH-C-TOP	8/11/2017	0 - 2.8'	-35.3	956248.06	642180.93	x	x	x	x
NHH-C-BOTTOM	8/11/2017	2.8 – 8.0'	-35.3	956248.06	642180.93	x	x	x	x
NHH-D-TOP	8/11/2017	0 – 4.8'	-18.0	954353.17	651157.56	x	x	x	x
NHH-D-BOTTOM	8/11/2017	4.8 – 10.3'	-18.0	954353.17	651157.56	x	x	x	x
NHH-E-TOP	8/14/2017	0 – 6.5'	-35.9	954719.81	651097.16	x	x	x	x
NHH-E-BOTTOM	8/14/2017	6.5 – 8.1'	-35.9	954719.81	651097.16	x	x	x	x
NHH-F-TOP	8/11/2017	0 – 3.2'	-17.7	954918.30	651077.63	x	x	x	x
NHH-F-REF-TOP	8/11/2017	0 – 3.2'	-17.7	954918.30	651077.63	x	x	x	x
NHH-F-BOTTOM	8/11/2017	3.2' – 10.5'	-17.7	954918.30	651077.63	x	x	x	x
NHH-G-TOP	8/11/2017	0 – 4.3'	-15.9	954957.69	656295.81	x	x	x	x
NHH-G-BOTTOM	8/11/2017	4.3 – 13.7'	-15.9	954957.69	656295.81	x	x	x	x
NHH-H-TOP	8/10/2017	0 – 5.4'	-36.2	955073.00	656256.70	x	x	x	x
NHH-H-REP-TOP	8/10/2017	0 – 5.4'	-36.2	955073.00	656256.70	x	x	x	x
NHH-H-BOTTOM	8/10/2017	5.4 – 7.7'	-36.2	955073.00	656256.70	x	x	x	x
NHH-I-TOP	8/10/2017	0 – 0.7'	-21.3	955525.41	656249.42	x	x	x	x
NHH-I-BOTTOM	8/10/2017	0.7' – 2.5'	-21.3	955525.41	656249.42	x	x	x	x
NHH-J	8/10/2017	0 – 5.4'	-21.1	955130.54	662186.32	x	x	x	x
NHH-K-TOP	8/10/2017	0 – 5.5'	-35.8	955275.32	662195.02	x	x	x	x
NHH-K-BOTTOM	8/10/2017	5.5 – 8.2'	-35.8	955275.32	662195.02	x			
NHH-L	8/10/2017	0 – 6.7'	-21.7	955734.84	662225.81	x	x	x	x
NHH-M	8/8/2017	0 – 6.8'	-30.4	955479.97	665130.38	x	x	x	x
NHH-N-TOP	8/8/2017	0 – 6.0'	-36.5	955867.55	665076.75	x	x	x	x
NHH-N-BOTTOM	8/8/2017	6.0 – 7.5'	-36.5	955867.55	665076.75	x			
NHH-O-TOP	8/8/2017	0 – 8.3'	-33.1	956251.13	665020.32	x	x	x	x
NHH-O-BOTTOM ¹	8/8/2017	8.7 – 10.9'	-33.1	956251.13	665020.32	x			
NHH-P-TOP	8/9/2017	0 – 5.8'	-15.8	955169.49	667299.54	x	x	x	x

1 - At NHH-O, the horizon 8.3-8.7' was not included in the sample due to the presence of 1-2" gravel.

Table 1 Sample collection dates for physical and chemical testing (cont.)

Sample ID	Date	Horizon	Water Depth (MLLW)	Easting, X (CT FT)	Northing, Y (CT FT)	Physical tests	Metals	PAHs, TOC	Pesticides, PCB Congeners
NHH-P-BOTTOM	8/9/2017	5.8 – 12.3'	-15.8	955169.49	667299.54	x	x	x	x
NHH-Q-TOP	8/9/2017	0 – 5.3'	-12.2	955500.09	667254.47	x	x	x	x
NHH-Q-BOTTOM	8/9/2017	5.3 – 29.4'	-12.2	955500.09	667254.47	x	x	x	x
NHH-R-TOP	8/10/2017	0 – 4.2'	-36.3	956066.76	667161.69	x	x	x	x
NHH-R-BOTTOM	8/10/2017	4.2 – 7.7'	-36.3	956066.76	667161.69	x	x	x	x
NHH-S-TOP	8/10/2017	0 – 6.0'	-37.6	956558.51	667100.36	x	x	x	x
NHH-S-BOTTOM	8/10/2017	6.0 – 6.4'	-37.6	956558.51	667100.36	x			
NHH-T-TOP	8/8/2017	0 – 4.8'	-8.7	955476.02	667998.66	x	x	x	x
NHH-T-BOTTOM	8/8/2017	4.8 – 16.3'	-8.7	955476.02	667998.66	x	x	x	x
NHH-U-TOP	8/9/2017	0 – 5.8'	-11.8	955696.43	667963.55	x	x	x	x
NHH-U-BOTTOM	8/9/2017	5.8 – 30.0'	-11.8	955696.43	667963.55	x	x	x	x
NHH-V-TOP	8/9/2017	0 – 4.8'	-35.4	956178.56	667900.02	x	x	x	x
NHH-V-BOTTOM	8/9/2017	4.8 – 8.6'	-35.4	956178.56	667900.02	x	x	x	x
NHH-W-TOP	8/9/2017	0 – 5.5'	-35.5	956642.29	667836.21	x	x	x	x
NHH-W-BOTTOM	8/9/2017	5.5 – 8.2'	-35.5	956642.29	667836.21	x			
NHH-X-TOP	8/8/2017	0 – 5.2'	-19.0	956695.36	669144.51	x	x	x	x
NHH-X-REP-TOP	8/8/2017	0 – 5.2'	-19.0	956695.36	669144.51	x	x	x	x
NHH-X-BOTTOM	8/8/2017	5.2 – 8.0'	-19.0	956695.36	669144.51	x	x	x	x
NHH-Y-TOP	8/8/2017	0 – 5.9'	-35.5	956935.61	668934.77	x	x	x	x
NHH-Y-BOTTOM	8/8/2017	5.9 – 8.5'	-35.5	956935.61	668934.77	x			
NHH-Z-TOP	8/8/2017	0 – 5.0'	-35.5	957127.56	668767.57	x	x	x	x
NHH-Z-BOTTOM	8/8/2017	5.0 – 8.7'	-35.5	957127.56	668767.57	x	x	x	x

Table 2 Sample collection dates and compositing information for biological testing and elutriate preparation

Sample ID	Date	Horizon	Water Depth (MLLW)	Easting, X (CT FT)	Northing, Y Y (CT FT)	Composite ID	10-day toxicity bioassay	SPP/Elutriate testing	28-day bioassay/tissue
Sediment									
NHH-C	8/17/2017	0 - 2.8'	-35.3	956248.06	642180.93	1	x	x	x
NHH-D	8/16/2017	0-4.8', 4.8–10.3'	-18.0	954353.17	651157.56	2	x	x	x
NHH-E	8/16/2017	0-6.5', 6.5-8.1'	-35.9	954719.81	651097.16				
NHH-F	8/16/2017	0-3.2', 3.2-10.5'	-17.7	954918.30	651077.63				
NHH-G	8/17/2017	0-4.3', 4.3-13.7'	-15.9	954957.69	656295.81	3	x	x	x
NHH-H	8/16/2017	0-5.4', 5.4-7.7'	-36.2	955073.00	656256.70				
NHH-I ¹	8/17/2017	0-0.7', 0.7-2.5'	-21.3	955525.41	656249.42				
NHH-J	8/15/2017	0-5.4'	-21.1	955130.54	662186.32	4	x	x	x
NHH-K	8/14/2017	0-5.5'	-35.8	955275.32	662195.02				
NHH-L	8/15/2017	0–6.7'	-21.7	955734.84	662225.81				
NHH-M	8/13/2017	0-6.8'	-30.4	955479.97	665130.38	5	x	x	x
NHH-N	8/13/2017	0-6.0', 6.0-7.5'	-36.5	955867.55	665076.75				
NHH-O	8/14/2017	0-8.3', 8.7-10.9'	-33.1	956251.13	665020.32				
NHH-P	8/12/2017	0-5.8', 5.8-12.3'	-15.8	955169.49	667299.54	6	x	x	x
NHH-Q	8/9/2017	0-5.3', 5.3-29.4'	-12.2	955500.09	667254.47				
NHH-R	8/16/2017	0-4.2', 4.2-7.7'	-36.3	956066.76	667161.69				
NHH-S	8/15/2017	0-6.0'	-37.6	956558.51	667100.36	7	x	x	x
NHH-T	8/12/2017	0-4.8', 4.8-16.3'	-8.7	955476.02	667998.66				
NHH-U	8/9/2017	0-5.8', 5.8-30.0'	-11.8	955696.43	667963.55				
NHH-V	8/15/2017	0-4.8', 4.8-8.6'	-35.4	956178.56	667900.02	8	x	x	x
NHH-W	8/15/2017	0-5.5', 5.5-8.2'	-35.5	956642.29	667836.21				
NHH-X	8/12/2017	0-5.2', 5.2-8.0'	-19.0	956695.36	669144.51				
NHH-Y	8/13/2017	0-5.9', 5.9-8.5'	-35.5	956935.61	668934.77	8	x	x	x
NHH-Z	8/12/2017	0-5.0, 5.0-8.7'	-35.5	957127.56	668767.57				
CLDS-Ref ¹	8/17/2017	0-0.5'	-83.0	976671.17	609873.57		x		x
Seawater									
NHC-I ²	8/17/2017	9.0	-18.0	955550.51	656267.52	3, 4		x	
NHC-V ²	8/17/2017	10.5'	-21.0	955785.97	667702.21	5, 6, 7, 8		x	
NHC-F ²	8/17/2017	10'	-20.0	954955.75	651155.34	1, 2		x	
CLDS-Ref	8/17/2017	3', 42', 80'	-83.0	976671.17	609873.57			x	

1 – Sample collected using grab sampler. Other samples collected using vibracoring device.

2 – Seawater samples used to prepare elutriate samples for multiple composites.

Figure 1 Actual Coring and Water Sampling Locations – Inner Harbor

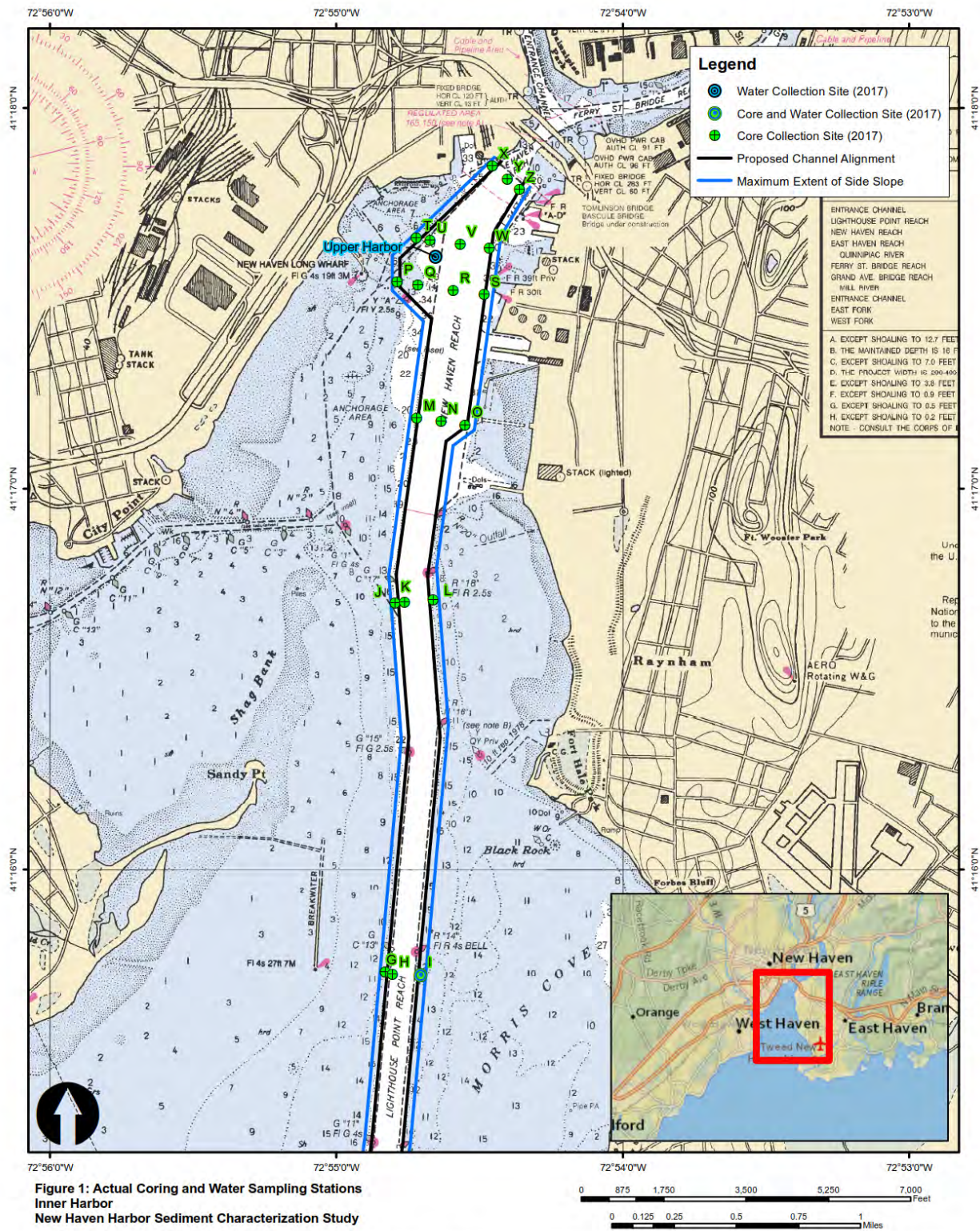
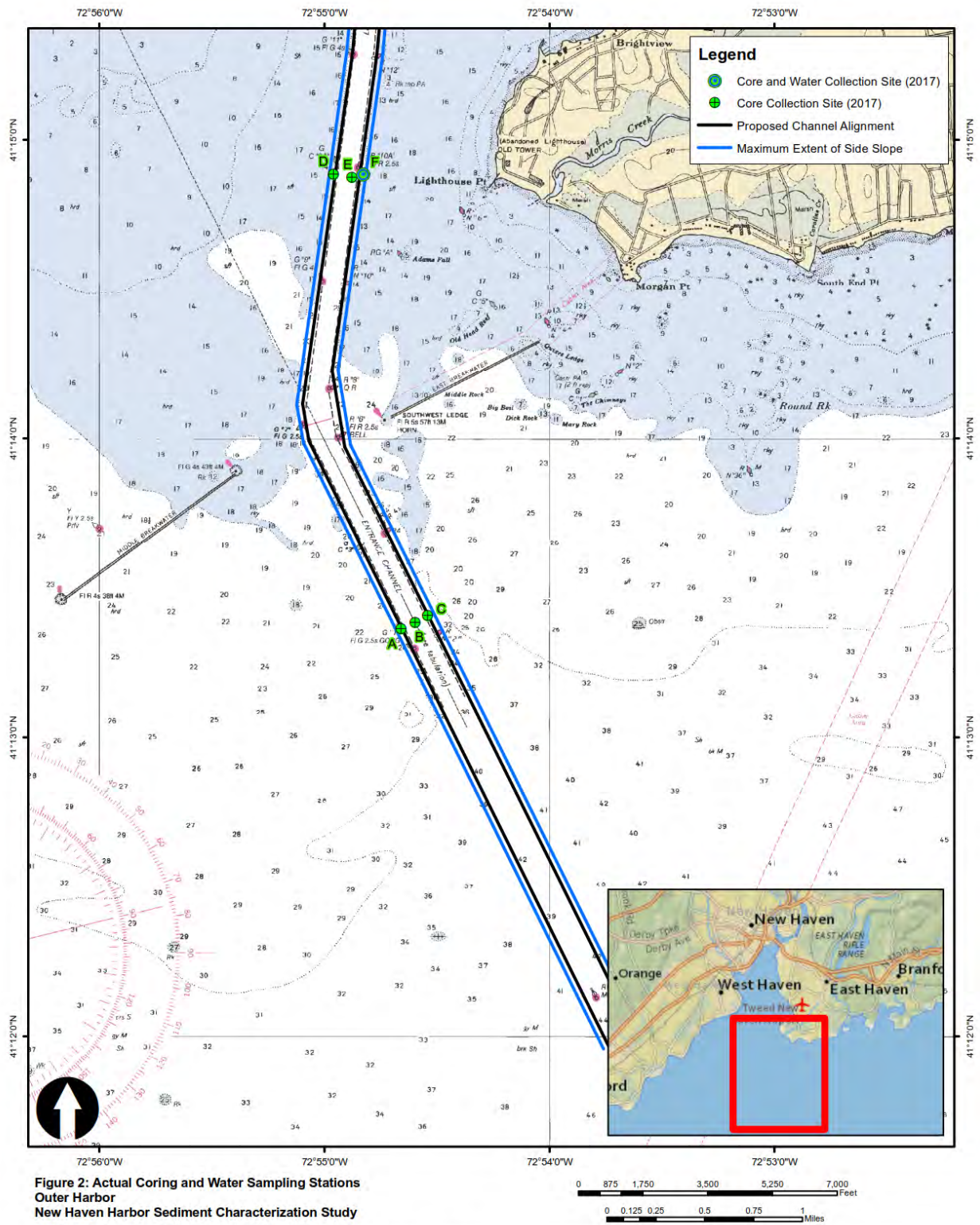


Figure 2 Actual Coring and Water Sampling Locations – Outer Harbor



2.1.1 Sediment collection

An initial core was collected to project depth at each of the 26 harbor stations for grain size and chemistry using a 3.5-inch diameter vibracore (Figures 1 and 2). Field characterization of the sediment cores determined which sediment horizons were selected for analysis (Table 1). Based on the initial grain size results NAE directed the project team to composite sediments from the core locations and depth intervals outlined in Table 2 for toxicological/biological testing. Additional cores were then collected in order to obtain a sufficient volume of sediment from the sample interval at each location for elutriate preparation, 10-day toxicity, and 28-day bioaccumulation testing.

Reference sediment was collected from CLDS-Ref using a Ted Young modified Van Veen grab sampler and a Ponar grab sampler. All sediment samples were transferred to a refrigerated box truck immediately after returning to the dock. The field report (AECOM, 2017b) provided in Appendix B provides additional detail related to the sampling in the harbor and the reference location.

2.1.2 Surface water collection

Water from the vicinity of the sediment composites in New Haven Harbor (dredge site water) and the CLDS reference area (suspended particulate phase [SPP] dilution water) were collected on August 17, 2017 using a pump and tubing system as outlined in the work plan (Table 2, Figures 1 and 2). The CLDS reference water was collected using a large volume Niskin bottle. Water samples were also transferred to the refrigerated box truck immediately after returning to the dock.

2.1.3 Sampling deviations/difficulties encountered

There are a few notes of interest relative to the New Haven Harbor sediment collection effort:

1. Significant changes to bottom topography were encountered relative to the last bathymetric study of the harbor. At all locations, the planned core length required to attain the target depth (project depth plus a 2-foot allowable over depth) required adjustment in the field using field collected depth soundings and real time tidal correction data from NOAA.
2. According to the SOW, the sediment cores were supposed to be characterized via ASTM 2488. However, they were not. To compensate for this sediment from each sample intervals analyzed for grain size via hydrometer (ASTM 7928) in order to obtain more detailed information on the distribution of fine grained sediments in the project area. Due to the large volume of sediment required from a short interval at station NHH-C during the second week of the program, two individual cores were stacked within a single 5-foot core barrel prior to processing. The stacking process involves advancing the vibracore barrel to the target depth, raising the core barrel out of the sediment, and then advancing the barrel again. The approach greatly reduced the time to collect required sediment volume. Prior to proceeding with the stacked approach, a single 5-foot core was collected for comparison to the stacked core samples to verify that appropriate materials and recovery were retained within the 20 stacked samples.
3. Similarly, sediment volume collection at NHH-I would have required a large number of cores due to the shallow project depth (2.5 feet). In order to meet schedule constraints, the NAE Technical Manager approved collection using a Van Veen/ ponar grab sampler.

2.2 Sample processing and analysis

The project QAPP provides detailed descriptions of all aqueous, sediment, and tissue sample handling and the methods used for chemical, physical and biological testing. Section B.6 of the QAPP (AECOM, 2017a) summarize the chemical and physical testing methods used and Section B.7 summarizes the bioassay and bioaccumulation test methods. Only minor deviations from the QAPP were noted and these are discussed in Section 4.1 for the biological testing and Section 4.2 for the analytical chemistry. These deviations are not expected to have an impact on the usability of the data for decision making.

The analytical project team included two laboratories:

- EnviroSystems Inc. (ESI)(Hampton, NH) provided processing facilities and performed bulk sediment, SPP, and bioaccumulation bioassays, and elutriate chemistry testing; and
- Alpha Analytical Laboratories (Mansfield, MA) provided chemical and physical testing services.

Sediment samples for chemical or physical testing were transferred directly from the field to the associated laboratory. All other samples (bulk sediment or water grab samples) were transferred to the processing facility (ESI) for further processing before subsequent testing commenced. All field to lab and inter-lab transfers were conducted under chain-of-custody (COC) procedures as specified in the project work plan. These records are included in the laboratory backup appendices.

2.2.1 Phased testing

Testing was conducted in two phases. The first phase provided NAE with rapid sediment grain size results to enable NAE to develop a compositing scheme for subsequent testing. The second phase represented full scale testing of the site material including physical and chemical testing performed on individual sediment samples, and elutriate chemistry testing, toxicity bioassays and bioaccumulation bioassays performed on the sample composites identified in Table 2.

2.2.2 Sample handling

As outlined in the work plan, cores representing the depth interval of interest were collected via vibracore (Table 1). After collection, the core was cut into 5.0-foot sections to facilitate handling. The liner of those individual core sections were then split longitudinally, photographed, and described/ logged. At many of the stations, two depth intervals were selected for sampling due to changes in stratigraphy (composition and color). After logging was complete, the requisite core section (surface to project depth) was transferred to storage containers (5-gallon polyethylene buckets) and the entire interval homogenized to obtain depth-integrated samples. Sub-samples were collected for rapid grain size analysis and chemistry. The remaining material was retained for biological testing and kept in labeled, 5-gallon polyethylene buckets prior to compositing. Once the compositing scheme had been determined, a second set of cores was advanced in order to collect the necessary volume for biological testing.

Water samples were collected via Niskin bottle and a pump/ tubing assembly, stored in labeled, 5-gallon polyethylene carboys, and kept on ice until returning to the dock. All sediment and water samples were securely stored in a locked, refrigerated box truck (set to 4°C) for the duration of the field effort. At the conclusion of the sampling program, all samples were delivered to ESI's laboratory on August 18, 2017. During the sampling program, there were not any deviations from the sample hold times and preservation conditions outlined in the workplan (Appendix A).

The field report (AECOM, 2017b) provided in Appendix B provides additional detail related to the sampling handling and processing.

2.2.3 Test sample preparation and compositing

Following the sample compositing direction from NAE, eight harbor sediment composites were prepared by combining equal volumes of the material from the various stations collected via vibracore for subsequent testing. Sample composites were prepared by AECOM staff on August 21-22, 2017 at ESI according to the work plan (Appendix A). The sample compositing scheme is depicted in Table 2.

2.2.4 Physical and chemical sample analysis

Physical and chemical analysis methods are fully detailed in the project work plan (Appendix A). In some cases, specialized or modified methods were specified to accommodate unique project objectives. A description of the specialized or modified methods is also provided in this section. All laboratory reports for physical and chemical analyses are provided in Appendices C and D, respectively.

The project team used EPA SW-846 8270D-SIM /680M for the analysis of polychlorinated biphenyl (PCB) congeners. The selected gas chromatography/mass spectrometry (GC/MS) method is generally preferred because it provides

more definitive quantitation and identification of the target PCB congeners and is less prone to interferences or mis-identification than the earlier 8082 (gas chromatography/electron capture detector [GC/ECD]) method. Table 3 summarizes the analytes, analytical methods and method detection limits achieved for the bulk sediment chemistry analyses of the individual core samples.

2.2.5 Elutriate/suspended particulate phase sample preparation and analysis

New Haven Harbor dredge site water was used in the preparation of all chemical elutriates and formed the basis of all elutriate/SPP sample preparations. Water from CLDS was used for all SPP dilutions in the toxicity tests.

Each elutriate/SPP batch was prepared by adding the homogenized sediment to the site water in a 1:4 volumetric ratio, stirring the mixture for 30 minutes, and then allowing the mixture to settle for 1 hour. The supernatant was siphoned off prior to chemical and biological evaluations. Chemical samples were also centrifuged as required by the protocols. All samples were stored at or below 4°C when not in use. Elutriate samples were containerized for chemistry analysis (i.e., filtration of metals samples, analysis of metals and (total) organic compounds). Table 4 provides a summary of the elutriate/ SPP preparation.

Elutriate samples were analyzed for metals, pesticides, pentachlorophenol, and PCB congeners. Most seawater metal measurements were aided with an initial preconcentration step to separate the analytes of interest from the interfering salt matrix. An inductively coupled plasma mass spectrometer (ICP/MS) was then used for the analysis of the extracted metals. Alternate methods (as specified in the work plan) were used to measure chromium 6 (Cr6+), and mercury (Hg) in the elutriate/seawater matrix. Table 5 summarizes the analytes, analytical methods and method detection limits achieved for the elutriate chemistry analyses.

Water column bioassays were conducted in accordance with the RIM (EPA/USACE, 2004), the Inland Testing Manual (EPA/USACE, 1998) and the project work plan (AECOM, 2017a). Test organisms for the water column bioassays included *A. bahia*, *Menidia beryllina*, and *Arbacia punctulata*. Table 6 summarizes the test conditions for these bioassays and Table 7 identifies the dates of the SPP testing. The toxicity tests were completed on a total of eight elutriate samples that were split into two groups of four and analyzed in two separate rounds of assays (referred to as Round 1 and Round 2) with staggered start dates, each with their own respective laboratory control samples and reference samples. All SPP testing was started before the 24-hour holding time for suspended particulate phase solutions. Results and protocol deviations are described in Section 3.2.2.

2.2.5.1 Test species

A. bahia were ≤ 5 days old and were obtained from cultures maintained by Aquatic Resource Organisms (ARO) of Hampton, New Hampshire. *M. beryllina* were 9-14 days old at the start of the assay and were obtained from Aquatic BioSystems, Inc., (ABS), Fort Collins, Colorado for the Round 1 assay, and from ARO for the Round 2 assay. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. Organisms were transferred to test vessels using a large bore pipet to minimize the amount of water added to test solutions.

Adult *A. punctulata* were from cultures maintained by ESI. Original stock was obtained from a commercial supplier. Adult sea urchins are maintained in the laboratory for as long as they are viable. Male and female urchins are maintained in separate chambers at a temperature of approximately $12 \pm 3^\circ\text{C}$ after spawning.

2.2.5.2 Reference toxicant assays

ESI completed acute 96-hour sodium dodecyl sulfate (SDS) reference toxicant assays for *A. bahia* and *M. beryllina*. Results were within two standard deviations of the historic mean of ESI's control charts, indicating that the test organisms were healthy. The *A. punctulata* copper reference toxicant assay was also within two standard deviations of the corresponding control chart mean. Table 8 summarizes the results of the reference toxicant assays conducted in support of the SPP assays.

Although the work plan (AECOM, 2017a) specified that the reference toxicant assays be conducted concurrent with the SPP tests, the reference toxicant assays were conducted approximately a week after the SPP tests terminated. The RIM does not specify that the assays be conducted concurrently and the lack of concurrence between the project assay and the reference toxicant assays does not impact the findings of the project assays.

2.2.6 10-day whole sediment toxicity testing

Bulk sediment bioassays are an important part of the overall suitability testing framework for CLDS consideration and agency guidance specifies that a filter feeder, a deposit feeder, and a burrowing organism be represented in the assay. Ten-day whole sediment bioassays were performed using the crustacean *Americamysis bahia* (mysid shrimp) and the crustacean amphipod *Leptocheirus plumulosus* to represent these feeding strategies in accordance with the RIM (EPA/USACE, 2004), the Inland Testing Manual (EPA/USACE, 1998), and the project work plan (AECOM, 2017a). *A. bahia* is a filter and deposit feeder that spends much of its time in the water above the sediment-water interface. The amphipod *L. plumulosus* builds burrows in the sediment and feeds on particles that are in suspension and on the sediment surface.

Table 9 summarizes the test conditions for the 10-day whole sediment toxicity tests. Assays with both species began on September 1, 2017 and were terminated on September 11, 2017. The control sediment used in the assays was natural sediment collected from the Hampton Estuary, Hampton, New Hampshire. The area is not known to receive any direct industrial inputs and has been used as a laboratory reference sediment in the testing of marine sediments for over 25 years. Overlying seawater was obtained from the Hampton Estuary. Water from the estuary has been used for the culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean.

Results and protocol deviations are described in Section 3.1.3.

2.2.6.1 Test species

A. bahia were obtained from ARO. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. *A. bahia* used in the assay were ≤ 5 days old at the start of the test.

L. plumulosus were obtained from cultures maintained by ARO. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. *L. plumulosus* were non-reproductive adults.

2.2.6.2 Reference toxicants

As part of the laboratory quality control program, standard reference toxicant assays were conducted with a subsample of the organisms received for testing, for each test species. ESI completed an acute 96-hour SDS reference toxicant assay for *A. bahia* and 96-hour cadmium reference toxicant assay for *L. plumulosus*. Results were within two standard deviations of the historic mean of ESI's control charts, indicating that the test organisms were healthy. Table 10 summarizes the results of the reference toxicant assays conducted in support of the SPP assays.

2.2.7 28-day bioaccumulation bioassay and analysis

The 28-day solid phase/bioaccumulation evaluation was conducted in accordance with the RIM (EPA/USACE, 2004), the Inland Testing Manual (EPA/USACE, 1998) and the project work plan (AECOM, 2017a) using the bivalve *Macoma nasuta* and the burrowing polychaete *Nereis virens*. Table 11 summarizes the test conditions for the 28-day bioaccumulation bioassay.

The *M. nasuta* assays were initiated on August 29, 2017 and were completed on September 26, 2017. The *N. virens* assays were initiated on August 31, 2017 and came down on September 28, 2017. Results and protocol deviations are described in Section 3.3.1.

At the end of the 28-day bioaccumulation assay exposure period and the 24 hour depuration period, the test organisms were recovered, rinsed/depurated with clean seawater, homogenized, frozen and transferred to the chemistry laboratory for preparation and analysis. Tissue samples were analyzed for metals, PAHs, pesticides, PCB congeners. Table 12 summarizes the analytes, analytical methods and method detection limits achieved for the tissue chemistry analyses.

2.2.7.1 Test species

M. nasuta, 15-40 mm in total length, were obtained from ARO. Organisms were field collected along the Washington coast and shipped to ARO via overnight delivery. At ESI, the clams were placed in clean holding sediment with flowing seawater and monitored for at least 24 hours prior to use. Damaged bivalves and those that would not close when prodded were discarded. The *Macoma* test commenced on August 29, 2017. A total of 30 organisms were added to each replicate in order to obtain sufficient tissue at test termination.

Adult *N. virens* were also obtained from ARO. Worms were collected in the field from the Damariscotta River in Boothbay Harbor, Maine and delivered to ARO. At ESI, the worms were placed in clean holding sediment with flowing seawater and monitored for at least 24 hours prior to use. Damaged and inactive worms were not used in the assay. The *Nereis* test assay commenced on August 31, 2017 with a total of 20 organisms added to each replicate in order to obtain sufficient tissue at test termination.

2.2.7.2 Reference toxicants

ESI completed acute 96-hour copper reference toxicant assays for *M. nasuta* and *N. virens* concurrent with the 28-day bioassays. Results were within two standard deviations of the historic mean of ESI's control charts, indicating that the test organisms were healthy. Table 13 summarizes the results of the reference toxicant assays conducted in support of the 28-day bioassays.

2.3 Data analysis

The array of chemical, physical and biological testing that was performed on the New Haven sediments provides a comprehensive data set from which material quality and its suitability for various alternative placement options, including unconfined placement at the CLDS, can be assessed. These data sets were generally evaluated in the following ways:

- Biological testing data were compared to reference or control values;
- Tissue chemistry results were compared to the reference site tissue chemistry using non-parametric and t-tests.

A description of these evaluation methods is provided below.

2.3.1 Toxicity bioassay statistics

Survival and effects data were analyzed using statistical software (CETIS) to determine significant differences between the project sediments and the laboratory control, and between project sediments or suspended phase solutions and the agency-selected reference site sediments or solutions. Survival data were evaluated to determine homogeneity of sample variances and normality of distribution. Data sets were subsequently evaluated using the appropriate parametric or non-parametric analysis. Pair-wise comparisons were based on the appropriate statistical analysis presented in the EPA decision tree guidelines specified in individual test methods. Statistical difference was evaluated at $\alpha=0.05$. For the SPP testing, acute exposure endpoints, the median lethal concentration (LC50) and the median effective concentration (EC50; in the *Arbacia* testing), were calculated and responses in the undiluted SPP solutions were evaluated against the responses in the reference site diluent.

2.3.2 Bioaccumulative tissue statistics

The statistical analyses of body burden data were completed to determine significant differences between the reference sediment and each site composite sample. The statistical analyses were completed for all compounds of concern identified in the work plan; however the findings of significance discussed in Section 3.3.3 focus only on those compounds detected in the reference sample. Per RIM guidelines, the MDL is used in instances when a compound is not detected for purposes of calculating a mean concentration. MDLs used in statistical computations are adjusted for differences in tissue mass and final extract volumes used in the analysis for each sample.

Data were evaluated to determine homogeneity of sample variances and normality of distribution using appropriate statistics. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Statistical difference was evaluated at $\alpha = 0.05$.

Table 3 Parameters, analytical methods, and achieved method detection limits for sediment

Parameter	Method Reference	Method Number	MDL	MDL Units
Physical Tests				
Total Solids/Water Content	ASTM	D-2216	0.1	%
Percent Moisture	SM	2540	0.1	%
Grain Size Analysis	ASTM	D-6913	N/A	N/A
Hydrometer Analysis	ASTM	D7928	N/A	N/A
TOC	SW-846	9060	0.01	%
Metals				
Arsenic	SW 846	6020A	0.034	mg/kg
Cadmium	SW 846	6020A	0.013	mg/kg
Chromium	SW 846	6020A	0.237	mg/kg
Copper	SW 846	6020A	0.098	mg/kg
Lead	SW 846	6020A	0.074	mg/kg
Mercury	SW 846	7474/7471B	0.005	mg/kg
Nickel	SW 846	6020A	0.135	mg/kg
Zinc	SW 846	6020A	1.32	mg/kg
PAHs				
Acenaphthene	SW-846	8270DSIM	6.98	ug/kg
Acenaphthylene	SW-846	8270DSIM	6.98	ug/kg
Anthracene	SW-846	8270D-SIM	6.98	ug/kg
Benzo(a)anthracene	SW-846	8270DSIM	6.98	ug/kg
Benzo(a)pyrene	SW-846	8270DSIM	6.98	ug/kg
Benzo(b)fluoranthene	SW-846	8270D-SIM	6.98	ug/kg
Benzo(k)fluoranthene	SW-846	8270D-SIM	6.98	ug/kg
Benzo(g,h,i)perylene	SW-846	8270D-SIM	6.98	ug/kg
Chrysene	SW-846	8270D-SIM	6.98	ug/kg
Dibenz(a,h)anthracene	SW-846	8270DSIM	6.98	ug/kg
Fluoranthene	SW-846	8270D-SIM	34 ^a	ug/kg
Fluorene	SW-846	8270D-SIM	6.98	ug/kg
Indeno(1,2,3-cd)pyrene	SW-846	8270D-SIM	6.98	ug/kg
Naphthalene	SW-846	8270D-SIM	6.98	ug/kg
Phenanthrene	SW-846	8270D-SIM	6.98	ug/kg
Pyrene	SW-846	8270D-SIM	6.98	ug/kg
Pesticides				
Aldrin	SW-846	8081B	1.4	ug/kg
Chlordane – Alpha	SW-846	8081B	1.4	ug/kg
Chlordane – gamma	SW-846	8081B	1.4	ug/kg
Chlordane – oxy	SW-846	8081B	2.79	ug/kg
4,4' – DDT	SW-846	8081B	1.4	ug/kg
4,4' – DDD	SW-846	8081B	1.4	ug/kg
4,4' – DDE	SW-846	8081B	1.4	ug/kg
Dieldrin	SW-846	8081B	1.4	ug/kg
Endosulfan alpha and beta	SW-846	8081B	1.4	ug/kg
Endrin	SW-846	8081B	1.4	ug/kg
Heptachlor and derivative (epoxide)	SW-846	8081B	2.79	ug/kg
Hexachlorocyclohexane (lindane)	SW-846	8081B	2.79	ug/kg
Methoxychlor	SW-846	8081B	14	ug/kg
Toxaphene	SW-846	8081B	70.1	ug/kg
trans and cis Nonachlor	SW-846	8081B	1.4	ug/kg
Hexachlorobenzene	SW-846	8081B	2.79	ug/kg
PCBs				
C12(8)	SW-846	8082/8270 SIM	0.698	ug/kg
C13(18)	SW-846	8082/8270 SIM	0.698	ug/kg
C13(28)	SW-846	8082/8270 SIM	0.698	ug/kg
C14(44)	SW-846	8082/8270 SIM	0.698	ug/kg
C14(52)	SW-846	8082/8270 SIM	0.698	ug/kg
C14(66)	SW-846	8082/8270 SIM	0.698	ug/kg
C15(101)	SW-846	8082/8270 SIM	0.698	ug/kg
C15(105)	SW-846	8082/8270 SIM	0.698	ug/kg
C15(118)	SW-846	8082/8270 SIM	0.698	ug/kg
C16(128)	SW-846	8082/8270 SIM	0.698	ug/kg

Table 3 Parameters, analytical methods, and achieved method detection limits for sediment (cont.)

Parameter	Method Reference	Method Number	MDL	MDL Units
C16(138)	SW-846	8082/8270 SIM	0.698	ug/kg
C16(153)	SW-846	8082/8270 SIM	0.698	ug/kg
C17(170)	SW-846	8082/8270 SIM	0.698	ug/kg
C17(180)	SW-846	8082/8270 SIM	0.698	ug/kg
C17(187)	SW-846	8082/8270 SIM	0.698	ug/kg
C18(195)	SW-846	8082/8270 SIM	0.698	ug/kg
C19(206)	SW-846	8082/8270 SIM	0.698	ug/kg
C110(209)	SW-846	8082/8270 SIM	0.698	ug/kg

^a Elevated due to sample re-run with 5x dilution. Absent the re-run, the MDL is 6.98 mg/kg

Table 4 Elutriate solution preparation summary

Water		Sediment		Elutriate Preparation			
Field ID	ESI Code	Composite ID	ESI Code	Elutriate ID	ESI Code	Date	Time
NHC-F	29516-050	Composite 1	29517-001	Elutriate 1 ^a	29521-002	08/22/17	1425
NHC-F	29516-050	Composite 2	29517-002	Elutriate 2 ^a	29521-004	08/22/17	1055
NHC-I	29516-048	Composite 3	29517-003	Elutriate 3 ^a	29521-006	08/22/17	1310
NHC-I	29516-048	Composite 4	29517-004	Elutriate 4 ^a	29521-008	08/22/17	1212
NHC-V	29516-049	Composite 5	29517-005	Elutriate 5	29521-010	08/23/17	1020
NHC-V	29516-049	Composite 6	29517-006	Elutriate 6	29521-012	08/23/17	1100
NHC-V	29516-049	Composite 7	29517-007	Elutriate 7	29521-014	08/23/17	0920
NHC-V	29516-049	Composite 8	29517-008	Elutriate 8	29521-016	08/23/17	1223
NHC-F	29516-050	Composite 1	29517-001	Elutriate 1 ^a	29521-017	08/25/17	0930
NHC-F	29516-050	Composite 2	29517-002	Elutriate 2 ^a	29521-018	08/25/17	1035
NHC-I	29516-048	Composite 3	29517-003	Elutriate 3 ^a	29521-019	08/25/17	1035
NHC-I	29516-048	Composite 4	29517-004	Elutriate 4 ^a	29521-020	08/25/17	1113

^a Elutriates 1 through 4 prepared on August 22, 2017 were used for the mysid assay only. Elutriates 1 through 4 prepared on August 25, 2017 were used for the *M. beryllina* and *A. punctulata* assays.

Table 5 Parameters, analytical methods, and achieved method detection limits for elutriates

Parameter	Method Reference	Method Number	MDL	MDL Units
Metals^a				
Arsenic	SW-846	6020	0.00016	mg/L
Cadmium	SW-846	6020	0.00005	mg/L
Chromium	SW-846	6020	0.00017	mg/L
Hexavalent chromium	SW-846	7196	0.003	mg/L
Copper	SW-846	6020	0.00038	mg/L
Lead	SW-846	6020	0.00034	mg/L
Mercury	SW-846	7470A	0.00001	mg/L
Nickel	SW-846	6020	0.00055	mg/L
Selenium	SW-846	6020	0.00023	mg/L
Silver	SW-846	6020	0.0023	mg/L
Zinc	SW-846	6020	0.0034	mg/L
PAHs^b				
Acenaphthene	SW-846	8270D	5.15	ug/L
Acenaphthylene	SW-846	8270D	5.15	ug/L
Anthracene	SW-846	8270D	5.15	ug/L
Benzo(a)anthracene	SW-846	8270D	5.15	ug/L
Benzo(a)pyrene	SW-846	8270D	5.15	ug/L
Benzo(b)fluoranthene	SW-846	8270D	5.15	ug/L
Benzo(k)fluoranthene	SW-846	8270D	5.15	ug/L
Benzo(g,h,i)perylene	SW-846	8270D	5.15	ug/L
Chrysene	SW-846	8270D	5.15	ug/L
Dibenz(a,h)anthracene	SW-846	8270D	5.15	ug/L
Fluoranthene	SW-846	8270D	5.15	ug/L
Fluorene	SW-846	8270D	5.15	ug/L
Indeno(1,2,3-cd)pyrene	SW-846	8270D	5.15	ug/L
Naphthalene	SW-846	8270D	5.15	ug/L
Phenanthrene	SW-846	8270D	5.15	ug/L
Pyrene	SW-846	8270D	5.15	ug/L
Other Organic compounds				
Pentachlorophenol ^c	SW-846	8270D	0.19	ug/L
Pesticides				
Aldrin	SW-846	8081B	0.001	ug/L
Chlordane (alpha/gamma/oxy)	SW-846	8081B	0.0021	ug/L
Chloropyrifos	SW-846	8081B	0.0014	ug/L
4,4'-DDT	SW-846	8081B	0.0011	ug/L
Dieldrin	SW-846	8081B	0.0005	ug/L
Endosulfan and derivatives (I, II)	SW-846	8081B	0.0005	ug/L
Endrin	SW-846	8081B	0.0011	ug/L
Heptachlor & derivative (epoxide)	SW-846	8081B	0.001	ug/L
Hexachlorocyclohexane (lindane)	SW-846	8081B	0.0022	ug/L
Toxaphene	SW-846	8081B	0.0257	ug/L

Table 5 Parameters, analytical methods, and achieved method detection limits for elutriates (cont.)

Parameter	Method Reference	Method Number	MDL	MDL Units
PCBs				
C12(8)	SW-846	8082	0.515	ug/L
C13(18)	SW-846	8082	0.515	ug/L
C13(28)	SW-846	8082	0.515	ug/L
C14(44)	SW-846	8082	0.515	ug/L
C14(52)	SW-846	8082	0.515	ug/L
C14(66)	SW-846	8082	0.515	ug/L
C15(101)	SW-846	8082	0.515	ug/L
C15(105)	SW-846	8082	0.515	ug/L
C15(118)	SW-846	8082	0.515	ug/L
C16(128)	SW-846	8082	0.515	ug/L
C16(138)	SW-846	8082	0.515	ug/L
C16(153)	SW-846	8082	0.515	ug/L
C17(170)	SW-846	8082	0.515	ug/L
C17(180)	SW-846	8082	0.515	ug/L
C17(187)	SW-846	8082	0.515	ug/L
C18(195)	SW-846	8082	0.515	ug/L
C19(206)	SW-846	8082	0.515	ug/L
C110(209)	SW-846	8082	0.515	ug/L

^a Metals samples were extracted from seawater matrix and preconcentrated before analysis.

^b Aqueous PAHs were only analyzed in the equipment blanks.

^c Pentachlorophenol was not analyzed in the equipment blanks.

Table 6 Suspended particulate phase testing conditions

Parameter	<i>A. bahia</i>	<i>M. beryllina</i>	<i>A. punctulata</i>
Treatments (SPP prepared from sediment composites and harbor water)*	8 Sample Composites and 1 CLDS Reference Site water	8 Sample Composites and 1 CLDS Reference Site water	8 Sample Composites and 1 CLDS Reference Site water
Replicates	5	5	5
Test population	1-5 days old	7-10 day with 24 hours variation	2 hours after fertilization
Temperature	Mean of $20 \pm 2^{\circ}\text{C}$ Maximum Deviation of 3°C	Mean of $20 \pm 2^{\circ}\text{C}$ Maximum Deviation of 3°C	Mean of $20 \pm 1^{\circ}\text{C}$ Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation	NA
pH	NA	NA	NA
Salinity	30 ‰ $\pm 10\%$	30 ‰ $\pm 10\%$	30 ‰ $\pm 10\%$
Ammonia	NA	NA	NA
Feeding	Daily, <24 hour old Artemia nauplii	Daily, <24 hour old Artemia nauplii	None
Reference Toxicant	SDS	SDS	Copper

Table 7 Period of assay conduct – suspended particulate phase testing

Elutriate		Test Species	Assay Start		Assay End	
Comp/Elutriate ID	ESI Code		Date	Time	Date	Time
Comp 1 Elutriate	29521-002	<i>A. bahia</i> Round 1	08/22/17	1540	08/26/17	1440
Comp 2 Elutriate	29521-004					
Comp 3 Elutriate	29521-006					
Comp 4 Elutriate	29521-008					
Comp 5 Elutriate	29521-010	<i>A. bahia</i> Round 2	08/23/17	1645	08/27/17	1540
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					
Comp 1 Elutriate	29521-017	<i>M. beryllina</i> Round 1 ^a	08/25/17	1620	08/29/17	1500
Comp 2 Elutriate	29521-018					
Comp 3 Elutriate	29521-019					
Comp 4 Elutriate	29521-020					
Comp 5 Elutriate	29521-010	<i>M. beryllina</i> Round 2	08/23/17	1545	08/27/17	1345
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					
Comp 1 Elutriate	29521-017	<i>A. punctulata</i> Round 1 ^a	08/25/17	1600	08/28/17	1125
Comp 2 Elutriate	29521-018					
Comp 3 Elutriate	29521-019					
Comp 4 Elutriate	29521-020					
Comp 5 Elutriate	29521-010	<i>A. punctulata</i> Round 2	08/23/17	1630	08/25/17	1630
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					

^a Rounds 1 of the *M. beryllina* and *A. punctulata* assay were first initiated on August 22, 2017 but failed to meet test acceptability criteria for survival in the laboratory control. The assays were successfully repeated on the dates and times listed above. The results of the first assays are included in Appendix E-1.

Table 8 Reference toxicant results – suspended particulate phase testing

Date	Organism Lot	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>A. bahia</i>						
08/31/17	03AbARO083017	96Hr LC-50	20.5	18.0	13.3 - 22.8	SDS (mg/L)
<i>M. beryllina</i>						
08/31/17	07MbABS082617	96Hr LC-50	7.2	6.2	3.6 - 8.8	SDS (mg/L)
<i>A. punctulata</i>						
08/30/17	99ApARO083017	EC-50-Dev	16.1	18.9	10.4 - 27.5	Copper (ug/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays.

Table 9 10-day whole sediment test conditions

Parameter	<i>L. plumulosus</i>	<i>A. bahia</i>
Treatments*	8 Sample Composites and 1 CLDS Reference Site Control	8 Sample Composites and 1 CLDS Reference Site Control
Replicates	5	5
Test population	Juvenile -non reproductive adult (2-4mm)	1-5 days old
Temperature	Mean of 20± 1°C Maximum Deviation of 3°C	Mean of 20 ± 1°C Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation
pH	NA	NA
Salinity	22‰ ±10%	32‰ ±10%
Ammonia	Porewater unionized ammonia <0.8 mg/L	Overlying water unionized ammonia <0.6 mg/L
Feeding	None	Daily, <24 hour old Artemia nauplii
Reference Toxicant	Cadmium	Sodium Dodecyl Sulfate (SDS)

Table 10 Reference toxicant results – 10-day whole sediment evaluation

Date	Organism Lot	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>A. bahia</i>						
08/31/17	03AbARO083017	96Hr LC-50	20.5	18.0	13.3 - 22.8	SDS (mg/L)
<i>L. plumulosus</i>						
09/02/17	11LpARO083117	96Hr LC-50	0.8	1.1	0.0 - 3.3	Cadmium (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays.

Table 11 28-day bioaccumulation bioassay test conditions

Parameter	<i>M. nasuta</i>	<i>N. virens</i>
Treatments*	8 Sample Composites and 1 CLDS Reference Site Control	8 Sample Composites and 1 CLDS Reference Site Control
Replicates	5	5
Test population	Adult clam	Adult Polychaete; 3-15 grams
Temperature	Mean of 12 ±2°C Maximum Deviation of 3°C	Mean of 12 ± 2°C Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation
pH	NA	NA
Salinity	25 – 30‰ ±10%	25 – 30‰ ±10%
Ammonia	NA	NA
Feeding	None	None
Reference Toxicant	Copper	Copper

Table 12 Parameters, analytical methods, and achieved method detection limits for tissue

Parameter	Method Reference	Method Number	MDL	MDL Units
Physical tests				
Percent Moisture	SM 2540	SM 2540	0.1	%
Total lipids	NOAA 130, 1998	NOAA Tech Memo NOS ORCA 130, 1998	0.1	%
Metals (wet wt.)				
Arsenic	EPA OW	6020	0.034	mg/kg
Cadmium	EPA OW	6020	0.11	mg/kg
Chromium	EPA OW	6020	0.036	mg/kg
Copper	EPA OW	6020	0.033	mg/kg
Lead	EPA OW	6020	0.006	mg/kg
Mercury	SW-846	7474	0.004	mg/kg
Nickel	EPA OW	6020	0.038	mg/kg
Zinc	EPA OW	6020	0.15	mg/kg
PAHs (wet wt.)				
Acenaphthene	SW-846	8270DIM	9.94	ug/kg
Acenaphthylene	SW-846	8270DSIM	9.94	ug/kg
Anthracene	SW-846	8270DSIM	9.94	ug/kg
Benzo(a)anthracene	SW-846	8270DSIM	9.94	ug/kg
Benzo(a)pyrene	SW-846	8270DIM	9.94	ug/kg
Benzo(b)fluoranthene	SW-846	8270D-SIM	9.94	ug/kg
Benzo(k)fluoranthene	SW-846	8270DSIM	9.94	ug/kg
Benzo(g,h,i)perylene	SW-846	8270D-SIM	9.94	ug/kg
Dibenz(a,h)anthracene	SW-846	8270D-SIM	9.94	ug/kg
Chrysene	SW-846	8270DIM	9.94	ug/kg
Fluoranthene	SW-846	8270DSIM	9.94	ug/kg
Fluorene	SW-846	8270DSIM	9.94	ug/kg
Indeno(1,2,3-cd)pyrene	SW-846	8270DSIM	9.94	ug/kg
Naphthalene	SW-846	8270DSIM	9.94	ug/kg
Phenanthrene	SW-846	8270DSIM	9.94	ug/kg
Pyrene	SW-846	8270DSIM	9.94	ug/kg
Pesticides (wet wt.)				
Aldrin	SW-846	8081B	0.05	ug/kg
Chlordane – Alpha	SW-846	8081B	0.5	ug/kg
Chlordane – gamma	SW-846	8081B	0.5	ug/kg
Chlordane – oxy	SW-846	8081B	1.0	ug/kg
4,4' – DDT	SW-846	8081B	0.5	ug/kg
4,4' – DDD	SW-846	8081B	0.5	ug/kg
4,4' – DDE	SW-846	8081B	0.5	ug/kg
Dieldrin	SW-846	8081B	0.5	ug/kg
Endosulfan & derivatives (I, II)	SW-846	8081B	0.5	ug/kg
Endrin	SW-846	8081B	0.5	ug/kg
Cis-Nonachlor	SW-846	8081B	0.5	ug/kg
Heptachlor & derivative (epoxide)	SW-846	8081B	1.0	ug/kg
Trans-Nonachlor	SW-846	8081B	0.5	ug/kg
Hexachlorocyclohexane (lindane)	SW-846	8081B	0.5	ug/kg
Methoxychlor	SW-846	8081B	5.0	ug/kg
Toxaphene	SW-846	8081B	25.1	ug/kg
Hexachlorobenzene	SW-846	8081B	1.0	ug/kg
PCBs (wet wt.)				
C12(8)	SW-846	8082	0.994	ug/kg
C13(18)	SW-846	8082	0.994	ug/kg
C13(28)	SW-846	8082	0.994	ug/kg
C14(44)	SW-846	8082	0.994	ug/kg
C14(52)	SW-846	8082	0.994	ug/kg
C14(66)	SW-846	8082	0.994	ug/kg
C15(101)	SW-846	8082	0.994	ug/kg
C15(105)	SW-846	8082	0.994	ug/kg
C15(118)	SW-846	8082	0.994	ug/kg
C16(128)	SW-846	8082	0.994	ug/kg
C16(138)	SW-846	8082	0.994	ug/kg
C16(153)	SW-846	8082	0.994	ug/kg

Table 12 Parameters, Analytical method, and achieved method detection limits for tissue (cont.)

Parameter	Method Reference	Method Number	MDL	MDL Units
C17(170)	SW-846	8082	0.994	ug/kg
C17(180)	SW-846	8082	0.994	ug/kg
C17(187)	SW-846	8082	0.994	ug/kg
C18(195)	SW-846	8082	0.994	ug/kg
C19(206)	SW-846	8082	0.994	ug/kg
C110(209)	SW-846	8082	0.994	ug/kg

Table 13 Reference toxicant results – 28-day bioaccumulation bioassay

Date	Organism Lot	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>M. nasuta</i>						
08/29/17	99MnARO082217	96Hr LC-50	9.2	9.0	1.1 – 16.8	Copper (mg/L)
<i>N. virens</i>						
08/31/17	99NvARO083117	96Hr LC-50	3.2	3.6	1.3 – 5.8	Copper (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays.

3. Results and discussion

The following sections present results evaluating the following potential exposure pathways that may be applicable to various placement options:

- Direct exposure to the dredged material (DM) following placement (bulk sediment);
- Direct exposure to the water column during/after mixing (elutriate and particulate phase analysis); and
- Bioaccumulation potential resulting from DM exposure over a period of time (bioaccumulation bioassays followed by tissue analysis).

The DM testing program proceeded in two phases. Phase 1 rapid grain size analyses were conducted to support sample pooling decisions and maximize full scale testing efficiency. Physical and chemical analyses were later repeated during Phase 2 of the testing program for chemical, physical, and biological testing data connectivity.

3.1 Sediment physical, chemical and toxicity characteristics

Bulk sediment quality and character are based on physical, chemical and toxicity bioassay tests. A wide range of chemical parameters was examined and toxicity was determined using 10-day exposures to crustaceans and amphipods. Detailed physical and chemical sediment measurements are provided in Table 14 (Phase 1) and Table 15 (Phase 2). The following sections present these findings; full laboratory backup files are provided in Appendices C, D, and E.

3.1.1 Sediment texture

Two primary sediment characteristics are sediment grain size and organic carbon content. Understanding sediment particle sizes and corresponding mineralogy is critical for evaluating sediment chemistry because chemical components vary naturally based on the mineralogy present. For example, chemical affinity to naturally occurring organic compounds, and chemical enrichment within biogenic carbon material are important processes that result in chemical enrichment within sedimentary organic carbon.

Table 14 (Phase 1) and Table 15 (Phase 2) summarize the sediment textures observed at the site. Backup laboratory grain size data for Phase 1 and Phase 2 are included in Appendices C1 and C2, respectively. Grain size data for the New Haven Harbor sediment samples showed that most samples were comprised predominantly of fine-grained materials (silt and clay) with a sub-set of samples containing predominantly sand (Table 15). Grain size correlated fairly well with total organic carbon (i.e., higher TOC values are generally related to samples with higher silt/clay fractions) (Table 5).

3.1.2 Sediment chemistry

After basic sediment properties like grain size and TOC content are understood (Tables 3 through 5), the chemical properties can be evaluated. Tables 16 through 20 summarize the results of the bulk sediment chemistry analyses conducted on 44 of the 51 samples submitted for grain size analysis. Backup laboratory sediment chemistry data are included in Appendix D1. An overview of findings per parameter is presented below.

In cases where values were below the laboratory reporting limit (RL), the result is considered undetected and qualified with a "U" in the data table.

3.1.2.1 Metals

Each of the eight metals analyzed (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) except mercury were present in all sediment samples at levels greater than the project reporting limits (Table 17). Mercury was reported as non-detect in six of the 44 samples and was reported as an estimated value between the method detection limit (MDL) and RL in three samples.

3.1.2.2 Polycyclic Aromatic Hydrocarbons (PAHs)

PAH compounds were detected in all but six of the 44 samples (Table 18). In all samples with detected PAHs, concentrations of high molecular weight (HMW)¹ PAHs were greater than the concentrations of the low molecular weight (LMW)² PAHs. The highest concentration of HMW and LMW PAHs (13,503 and 2,964 ug/kg, respectively) were measured in the field duplicate collected from the top horizon at location NHH-X (sample NHH-X-REP-TOP) with generally similar levels measured in the parent sample.

3.1.2.3 Pesticides

Pesticides were generally undetected or detected at low levels among in the samples (Table 19). Technical chlordane constituents, 4,4' DDE, 4,4' DDD, and 4,4' DDT were the most frequently detected pesticides; gamma-BHC (Lindane) was reported at two locations. Dieldrin and Endosulfan II were reported in several samples but results were qualified for interference and dual column precision that exceeds method criteria; this issue was also noted for several 4,4' DDT results.

3.1.2.4 Polychlorinated Biphenyls (PCBs)

Measurable concentrations of multiple PCB congeners were reported in 33 of the 44 samples (Table 20). Similar to the PAHs, the highest concentration of Total PCBs³ (1,658 ug/kg) was measured in the field duplicate collected from the top horizon at location NHH-X (sample NHH-X-REP-TOP) with generally similar levels measured in the parent sample.

3.1.2.5 Equipment Rinsate Blanks

Four rinsate blank samples (coring equipment, Niskin Bottle, pump and grab sampler) were analyzed for metals, PAHs, pesticides and PCBs (data are presented in Appendix D). No PCBs or pesticides were detected in any of the rinse blank samples above target reporting limits. Naphthalene was detected in all four rinse blank samples and ten other PAHs were also detected in the grab sampler rinsate. Chromium was detected in all four rinse blank samples and copper, nickel, and zinc were also detected in the grab sampler rinsate. Levels of constituents detected in the rinsate blanks were orders of magnitude lower than concentrations of these metals analyzed in sediment samples.

3.1.3 Whole sediment toxicity

A summary of survival data from the *A. bahia* and *L. plumulosus* assays is included in Table 21. Support data, including copies of bench sheets, are included in Appendix E1. Table 22 summarizes the laboratory control results and other assay acceptability criteria.

Before organisms were added to the test vessels, ammonia levels in the pore water were determined and pore water was found to contain unionized ammonia levels above 0.8 mg/L. Test initiation was delayed and test chambers were renewed daily with one volume addition of overlying water during this pre-assay phase. The sediments were monitored until colorimetric testing showed acceptable ammonia levels. As discussed in Section 3.1.3.1, pore water ammonia samples collected at the start of the *L. plumulosus* assay showed unionized ammonia levels in Composite 6 and Composite 8 were above the 0.8 mg/L threshold. However, ammonia toxicity does not appear to have impacted the results for these samples (see discussion in Section 3.1.3.1).

3.1.3.1 *A. bahia* 10 day solid phase assay

Mean mysid survival in the laboratory control sediment was 92%, and met guideline acceptance criteria (e.g. mean survival >90%; >70% in any replicate). Mean survival in the reference sediment was 98%. Survival of mysid shrimp exposed to New Haven Harbor sediment composites groups ranged from 74 to 96%. Statistical analyses show that there were negative effects on survival for mysids exposed to site Composite samples 1, 5 and 6 as compared to

¹ Calculated as the sum of concentrations for fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(ghi)perylene.

² Calculated as the sum of concentrations for naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene.

³ Calculated as the sum of the 18 NOAA congeners multiplied by 2.

mysids exposed to the CLDS reference sediment. The difference in survival from the CLDS reference sediment was <20% for Composite samples 1 and 5, however it was >20% for Composite sample 6.

3.1.3.2 *L. plumulosus* 10 day solid phase assay

Mean amphipod survival in the laboratory control was 94% and met acceptance criteria. Survival among organisms exposed to reference sediment was 95%, with mean survival of amphipods exposed to harbor sediments ranging from 87 to 96%. The statistical analyses show that there were no negative effects on survival for amphipods exposed to any of the site composites, except for Composite 8, as compared to amphipods exposed to the CLDS reference sediment. In Composite 8 however, the difference in survival from the CLDS reference sediment was <20%.

3.1.3.1 Whole sediment protocol deviations

Review of the data collected for these assays documented a few minor deviations from the method protocol and/or ESI's standard procedures.

Protocol requires that the *A. bahia* and *L. plumulosus* assays be conducted at $20 \pm 1^\circ\text{C}$. A temperature spike occurred beginning in the overnight hours at the outset of the assay, and the hourly temperatures exceeded the protocol range for approximately 16 hours reaching a maximum of 29.6°C at 5:37 AM on Saturday morning, September 2, 2017. The technician conducting the study assessed the temperature control unit of the water bath being used and determined that the unit was set to 19.5°C , with a thermostat reading of 19°C , indicating that the unit had malfunctioned. To correct the issue, the unit was disabled and room temperature adjusted to compensate. No further temperature deviations were noted for the remainder of the assay as demonstrated by the mean temperature of 20.8°C , which falls within the protocol range. The maximum temperature recorded also falls within the acceptable range for the species.

Protocol requires that the dissolved oxygen (DO) levels are maintained at or above 6 mg/L, and the assays were aerated from the start to ensure this requirement was met. However, there were sporadic DO measurements that fell below 6 mg/L in both assays (1 measurement in the *L. plumulosus* assay and 4 measurements in the *A. bahia* assay). There were no notations indicating a reason for this, however it is most likely that aeration tubes had fallen out of the test vessels and were replaced on discovery. The mean DO levels were well above the threshold, indicating that overall the desired DO levels were maintained.

To reduce pore water ammonia concentrations prior to the start of the assays, the overlying water was renewed daily for one week prior to the addition of the test organisms. However, upon review of final ammonia data it was determined that the unionized ammonia levels in Composites 6 and 8 of the *L. plumulosus* assay were above the protocol threshold limit of 0.8 mg/L for assay initiation, with calculated unionized ammonia values of 1.64 and 0.86 mg/L, respectively. No significant effects occurred with organisms exposed to Composite 6, which had two times the level of unionized ammonia than the threshold. There was only an 8% difference in mean survival for Composite 8 as compared to the reference site, and the unionized ammonia levels in Composite 8 had reached 0.11 mg/L by test day 3, suggesting that organism exposures above the target threshold were limited. This, coupled with the fact that no significant effect occurred in Composite 6, suggest that effects in Composite 8 do not stem from ammonia toxicity. A colorimetric test is used to determine total ammonia values during the pre-assay monitoring phase of testing. Given that this approach is reliant on analyst interpretation, it likely was unclear that total ammonia values were high enough to result in a protocol excursion.

These lab issues are considered to have had no impact on the outcome of the assays.

3.2 Water column evaluations

Water column evaluations performed in this study incorporated the analysis of chemical elutriate samples and SPP bioassay tests. The full suite of chemicals were measured in the elutriate mixtures to evaluate possible DM effects on water quality at the CLDS. SPP toxicity bioassays included three test species: crustacean, fish, and sea urchin larvae. Acute toxicity as well as very sensitive (larvae) developmental effects have been evaluated.

3.2.1 Elutriate chemistry

Table 23 summarizes elutriate chemistry results obtained after mixing the site materials with reference site seawater to simulate DM mixing at the CLDS. Backup laboratory elutriate chemistry data are included in Appendix D2.

Pentachlorophenol and pesticides were below or only slightly above target reporting limits for all samples analyzed. PCBs were below or slightly above reporting limits in most samples with Composite 6 and Composite 7 having Total PCB levels approximately ten-fold higher than the other samples.

In general, metals results were also below or slightly above reporting limits in most samples, with the exception of As and Zn which were detected in all samples. Chromium, copper, and nickel were also each detected in at least one sample.

3.2.2 SPP bioassay results

The SPP endpoints and adverse effects are presented in Table 24. Laboratory summary reports, including laboratory bench data, are presented in Appendix E2. All SPP laboratory control samples met minimum test acceptability criteria. Survival in laboratory controls was 100% for *A. bahia* in Rounds 1 and 2 and *M. beryllina* in Round 1 and 96% for *M. beryllina* in Round 2. This meets the minimum test acceptability criteria of $\geq 90\%$ survival in the laboratory control and is an indication that the test organisms were healthy and not stressed by handling. In the *A. punctulata* assays, embryo counts in the laboratory control treatment for Round 1 showed 83% of the embryos survived at the end of the assay and, of the original embryos, 83% were normally developed pluteus larvae. In Round 2, 76% of the laboratory control embryos survived and 72% of the original embryos were normally developed pluteus larvae. These results meet the minimum test acceptability criteria of $\geq 70\%$ embryo survival and $\geq 70\%$ normal development in the laboratory control sample.

A notable amount of total ammonia (>10 mg/L) was observed in the elutriates from Composites 2, 3, 4, 5, 6, 7, and 8 at the start of the assays for all three test species. EPA guidance suggests that ammonia, generally in the unionized form, can be a source of toxicity when total ammonia values are >5 mg/L (EPA 2002). EPA Ambient Water Quality Criteria (AWQC) for unionized ammonia in saltwater references LC50 values for two of the species tested: *A. bahia* (1.04 mg/L) and *M. beryllina* (0.88 mg/L) (EPA 1989). AWQC for unionized ammonia in saltwater are not available for *A. punctulata*, however, effects levels are available in the literature for urchin species ranging from 0.06 mg/L for an EC-50 for development (Maguire Group Inc., 2003) to approximately 0.336 mg/L for a 96-hour LC50 (Chang-Hoon Lee et al., 2013). Calculated unionized ammonia values from the start of the assays for these composites and species ranged between 0.5 to 2.1 mg/L (*A. bahia*), 0.4 to 2.1 mg/L (*M. beryllina*) and 0.4 to 1.9 mg/L (*A. punctulata*). Consequently, given the low levels of contaminants detected in the elutriate samples (Table 23; Section 3.2.1) it is possible that any observed toxicity in these composites discussed below is a product of total and unionized ammonia content, rather than sediment-related contaminants of concern.

3.2.2.1 *A. bahia* and *M. beryllina* Acute SPP evaluations

Mysid shrimp were not adversely affected by exposure to SPP solutions prepared from Composites 1, 2, 3, 4, and 5 with LC50 values of $>100\%$ for these samples. LC50 values for Composites 6, 7, and 8 were 68%, 65%, and 84% respectively. As described above, elevated ammonia levels in the SPP solutions likely contributed to the observed toxicity for Composites 6, 7, and 8. Total ammonia levels in these three SPP solutions ranged from 40 to 62 mg/L at the start of the assay and from 19 to 36 mg/L at test termination.

Minnows were not adversely affected by exposure to SPP solutions prepared from Composites 1, 2, 3, and 4 with LC50 values of $>100\%$ for these samples. Minnow LC50 values ranged from 46 to 78% in the remaining four composites. Total ammonia levels in Composites 5, 6, 7 and 8 ranged from 34 to 62 mg/L at the start of the assay and from 12 to 15 mg/L at test termination and these levels likely contributed to the observed minnow toxicity in these tests.

3.2.2.2 *A. punctulata* Acute SPP evaluations

Arbacia punctulata is the most sensitive of the project SPP exposed species. Survival and normal development were quantified when it was determined that the majority of the larvae ($>90\%$) had reached the pluteus larval stage.

Review of the data collected at the end of the assay indicate that all but one composite elutriate solution had significant negative impacts on embryonic survival and/or development, with LC50s ranging from 9 to 35% for survival and with EC50s ranging from 1 to 17% for development. Composite 1 had LC50 and EC50 values of >100%.

As described above, ammonia levels were elevated at the start of the assays and *A. punctulata* appears to be even more sensitive to ammonia than the mysid shrimp or minnows. Composite 1, which showed no toxicity, had a total ammonia level of 1.8 mg/L at both test initiation and termination. The remaining composites had higher total ammonia levels ranging from 12 to 62 mg/L at test initiation. At test termination, total ammonia levels for Composites 2, 3, and 4 had reduced slightly from their start levels and ranged from 10 to 15 mg/L. Ammonia levels were inadvertently not measured at test termination for Composites 5, 6, 7, and 8, but given the elevated levels at test initiation (34 to 62 mg/L), it is expected that the test termination levels would have remained elevated. It is expected that the elevated ammonia levels in these composite samples contributed to the observed survival and development impacts in these tests.

3.2.2.1 SPP protocol deviations

Review of the data collected for these assays documented a few minor deviations from the method protocol and/or ESI's standard procedures.

The protocol requires that the assays be conducted at $20 \pm 2^\circ\text{C}$ for the *A. bahia* and *M. beryllina* assays, and $20 \pm 1^\circ\text{C}$ for the *A. punctulata* assay. Although the assays were, for the most part, maintained in incubators set at their target temperatures, some temperatures recorded during the assays fell outside of the protocol range due to the ambient laboratory temperature at the time that dilutions were mixed and water quality measurements were taken. These species can tolerate temperatures within the ranges measured, and EPA protocol allows temperatures of $25 \pm 2^\circ\text{C}$ for these species. It was noted that the incubator for the Round 1 mysid assays was initially set too high but was corrected and possibly over-compensated the next day.

In addition, the protocol requires that the assays be conducted at a salinity of $30 \pm 2\text{‰}$. It is not uncommon for the salinity to drift upwards during assay conduct due to evaporation and exceed the protocol requirement, but the salinities are adjusted daily as needed to account for this occurrence. In a few instances of the Round 1 mysid assay, the measured salinity was slightly below the acceptable range.

Last, due to technician oversight ammonia samples were not collected for analysis at assay initiation for the laboratory control or CLDS reference samples. Likewise, during Round 2 of the minnow and mysid assays the final ammonia samples were not collected for analysis. Rather, ammonia samples were taken from the 50% test concentration when the assays were terminated at 96 hours. Similarly, ammonia samples were not collected at the end of the Round 2 urchin assays.

These lab issues are considered to have had no impact on the outcome of the assays.

3.3 28-day bioaccumulation bioassay

To evaluate bioaccumulation potential of harbor sediments, the clam *Macoma nasuta* and the worm *Nereis virens* were exposed to material from the eight sediment composite groups. Table 25 provides a summary of the *M. nasuta* and *N. virens* survival data and Table 26 summarizes the laboratory control results and other assay acceptability criteria. Tissue chemistry data and statistical results (relative to reference) are summarized in Table 27 and Table 28. Laboratory bench sheets are included in Appendix E3.

3.3.1 Survival analysis

Mean *M. nasuta* survival was 97% and 99% for clams maintained in the laboratory control and reference (CLDS-Ref) site sediments, respectively. Mean percent survival of the bivalves exposed to harbor sediment composite groups ranged from 96 to 99%. The statistical evaluation of the survival data showed no significant reduction in survival for bivalves maintained in the site composites when compared to the CLDS reference sediment, with the exception of Composite 8; however, the difference in survival was <10% as compared with the CLDS reference sediment.

Polychaete survival was 92% and 98% in the laboratory control and reference (CLDS-Ref), respectively. Mean percent survival among *N. virens* exposed to harbor sediments ranged from 93 to 98%. The statistical evaluation of the data showed no significant reduction in survival for polychaetes maintained in the site composites when compared to the CLDS reference sediment, with the exception of Composite 6; however, the difference in survival was <10% as compared with the CLDS reference sediment.

Survival of clams and worms met established guideline criteria. Surviving organisms for both species tested provided sufficient tissue for preparation and analysis of body burdens.

3.3.1.1 28-day bioaccumulation bioassay protocol deviations

Review of the data collected for these assays documented one minor deviation from the method protocol and/or ESI's standard procedures.

The hourly temperature logger was activated on Day 0 (August 29, 2017) of the *M. nasuta* assay, 2 days earlier than the *N. virens* test was initiated. Due to an oversight, the temperature logger was removed from the temperature controlled room at the end of the *M. nasuta* assay on September 26, 2017, two days prior to the end of the *N. virens* assay. Therefore, hourly temperatures were not measured for the final two days of the *N. virens* assay. There were no abnormalities observed in the daily water quality measurements that were collected during this period. This represents a deviation from ESI's SOP and a data gap, however this deviation is considered to have had no impact on the outcome of the assays.

3.3.2 Tissue chemistry

Test organism tissues were analyzed for the full set of chemical parameters established for the program (AECOM, 2017a) to evaluate the bioaccumulative aspect of the project material. The chemical results provided in Table 27 (*M. nasuta*) and Table 28 (*N. virens*) are presented on a wet weight basis. Backup laboratory tissue chemistry data are included in Appendix D3. Statistical comparisons of tissue body burdens are discussed in Section 3.3.3.

Seven of the eight metals analyzed (As, Cd, Cr, Cu, Pb, Ni, Zn) were detected in all tissue composite samples. Mercury was not detected in clam tissues from Composites 1, 5, and 6. PAHs were detected in all tissue composite samples. For both clams and worms, the highest levels of PAHs were measured in Composite 8. Individual pesticides were detected infrequently in clam tissues and not at all in worm tissues. Endrin was the most frequently detected pesticide in the clam tissues. PCBs were detected in both clam and worm tissues from all composites except clam tissues from the CLDS reference site and Composite 1. Clam tissues from Composite 6 had the highest PCB concentrations.

3.3.3 Tissue body burden analysis

Review of *M. nasuta* tissue data document statistically significant uptake of several chemicals (Table 27). Based on NAE criteria, there were significant increases in body burdens for clams reared in site composites as compared to reference tissue for the following chemicals: cadmium, chromium, copper, lead, five PAHs (benzo[a]anthracene, benzo[b]fluoranthene, fluoranthene, phenanthrene and pyrene) and DDE. Nickel, zinc, and endrin were the only chemicals detected in reference tissue that did not demonstrate significant uptake in site composite tissue. Tissue from Composites 4, 5, 6, 7 and 8 consistently demonstrated significant increases in body burden. There was also significant uptake of pyrene from Composite 2.

Review of *M. nasuta* body burden data showed that the following chemicals were also detected in site composite tissues, but no further analysis was required because the chemical was not detected in reference tissue: four PAHs (benzo[a]pyrene, benzo[k]fluoranthene, chrysene, and indeno[1,2,3-cd]pyrene), nine PCB congeners (8, 44, 52, 66, 101, 105, 118, 138 and 153) and six pesticides (cis-chlordane, trans-nonachlor, DDT, DDD, dieldrin and beta-Endosulfan). These chemicals were primarily present at high concentrations in Composites 4, 5, 6, 7 and 8.

The review of *N. virens* tissue data also found statistically significant uptake of several chemicals in site composites (Table 28). The statistical evaluation found there were significant increases in body burdens for worms maintained in site composites as compared to reference site tissue for the following chemicals: copper, zinc, four PAHs (acenaphthene, acenaphthylene, naphthalene and phenanthrene) and two PCB congeners (138 and 153). It should

be noted that nearly all PAHs and PCBs reflect higher mean tissue concentrations in the site composites as compared with the reference composites, and the majority of these mean concentrations are at or near the MDL suggesting interferences with the tissue matrix, rather than actual detection of these chemicals in worm tissue. This is true for zinc and two of the PAHs (acenaphthene and naphthalene); all were found to be significantly higher in site composite tissue as compared with reference tissue. The same is true for phenanthrene, which was detected at or near the MDL in all composites except Composite 1 where the phenanthrene was detected above the reporting limit. In this instance, however, the only hit above the reporting limit (in replicate A) was identified as an outlier. Tissue from Composite 4 demonstrated significant uptake of copper, and Composites 6, 7, and 8 demonstrated significant increases in body burden for the PCB congeners 138 and 153. The other incidences of significant uptake of chemicals from Composites 2, 3, 4, 5, 6, 7 and 8 appeared to be at or near the MDL.

Review of body burden data for *N. virens* showed that the following chemicals were also detected in site composite tissues, but no further analysis was required because the chemical was not detected in reference tissue: four PAHs (anthracene, fluoranthene, fluorene and pyrene) and four PCB congeners (52, 101, 180 and 187). Most of these chemicals were primarily present at high concentrations in Composites 4, 5, 6, 7 and 8, although many of these chemicals were also present at low concentrations (at or slightly above the MDL) in Composite 1.

Results of body burden data generated from recovered *M. nasuta* and *N. virens* tissue consistently showed significant uptake of chemicals from Composites 4, 5, 6, 7 and 8. There were also sporadic incidences of significant uptake of chemicals from Composites 2 and 3, however these appeared to be at or near the MDL except in a few instances (e.g., fluorene and pyrene uptake in the clam from Composite 2).

Table 14 Rapid turnaround grain size results

	NHH-A-TOP 0 - 2.2' 0 – 5.4'	NHH-A-BOTTOM 2.2 - 9.9'	NHH-B 0-4.2'	NHH-C-TOP 0 - 2.8'	NHH-C-BOTTOM 2.8 – 8.0'	NHH-D-TOP 0 – 4.8'	NHH-D-BOTTOM 4.8 – 10.3'	NHH-E-TOP 0 – 6.5'	NHH-E-BOTTOM 6.5 – 8.1'	NHH-F-TOP 0 – 3.2'	NHH-F-REF-TOP 0 – 3.2'	NHH-F-BOTTOM 3.2 – 10.5'	NHH-G-TOP 0 – 4.3'	NHH-G-BOTTOM 4.3 – 13.7'	NHH-H-TOP 0 – 5.4'	NHH-H-REP-TOP 0 – 5.4'	NHH-H-BOTTOM 5.4 – 7.7'	NHH-I-TOP 0 – 0.7'	NHH-I-BOTTOM 0.7' – 2.5'	NHH-J
% Total Fines (<0.125 mm)	9.6	3.3	15.6	27	37.5	79	86.5	96.8	97.6	96.3	96.6	95.4	91.7	92.1	85.4	82.8	78.4	78.7	88.3	73.1
% Fine Sand (0.125 - 0.25 mm)	42.6	68	57	59.2	45.3	10.1	7.9	1	2	2	1.7	1.8	4	4.7	6.8	5.9	19.9	9.8	4.8	7.6
% Medium Sand (0.25 - 0.5 mm)	41.8	26.9	23.2	12.8	11.4	8	4.1	0.4	0.4	1	0.9	1.1	2.8	2.5	4.5	5.9	1.5	8.8	5.1	9.2
% Coarse Sand (0.5 - 2 mm)	4.5	1.8	2.8	0.9	3.8	1.9	1.2	0.8	0	0.3	0.8	1.4	1	0.7	3.3	5	0.2	2.7	1.8	10.1
% Total Gravel (>2 mm)	1.5	0	1.4	0.1	2	1	0.3	1	0	0.4	0	0.3	0.5	0	0	0.4	0	0	0	0

	NHH-K-TOP 0 – 5.5'	NHH-K-BOTTOM 5.5 – 8.2'	NHH-L 0 – 6.7'	NHH-M 0 – 6.8'	NHH-N-TOP 0 – 6.0'	NHH-N-BOTTOM 6.0 – 7.5'	NHH-O-TOP 0 – 8.3'	NHH-O-BOTTOM 8.7 – 10.9'	NHH-P-TOP 0 – 5.8'	NHH-P-BOTTOM 5.8 – 12.3'	NHH-Q-TOP 0 – 5.3'	NHH-Q-BOTTOM 5.3 – 29.4'	NHH-R-TOP 0 – 4.2'	NHH-R-BOTTOM 4.2 – 7.7'	NHH-S-TOP 0 – 6.0'	NHH-S-BOTTOM 6.0 – 6.4'	NHH-T-TOP 0 – 4.8'	NHH-T-BOTTOM 4.8 – 16.3'	NHH-U-TOP 0 – 5.8'	NHH-U-BOTTOM 5.8 – 30.0'
% Total Fines (<0.125 mm)	80.3	1.6	84.3	98.2	71.8	18.6	95.6	22.4	90.4	91.2	96.6	89.5	83.9	88.4	87.6	22	98.6	97.7	94.7	84.3
% Fine Sand (0.125 - 0.25 mm)	0	38.7	6.1	1.5	11.2	78.6	2.9	76.9	4.2	1.7	1.4	2.6	2.9	2.6	8.3	74.3	1.4	1.2	2.5	5.5
% Medium Sand (0.25 - 0.5 mm)	3.7	51.3	5	0.3	12	2.6	1.2	0.7	2.1	3.3	1.3	3.1	5.3	5.4	3.1	3.3	0	1	2.5	5.9
% Coarse Sand (0.5 - 2 mm)	15.2	8.1	4.4	0	2.6	0.2	0.3	0	2.9	3.8	0.7	3.9	7.9	3.6	1	0.4	0	0.1	0.3	4
% Total Gravel (>2 mm)	0.8	0.3	0.2	0	2.4	0	0	0	0.4	0	0	0.9	0	0	0	0	0	0	0	0.3

	NHH-V-TOP 0 – 4.8'	NHH-V-BOTTOM 4.8 – 8.6'	NHH-W-TOP 0 – 5.5'	NHH-W-BOTTOM 5.5 – 8.2'	NHH-X-TOP 0 – 5.2'	NHH-X-REP-TOP 0 – 5.2'	NHH-X-BOTTOM 5.2 – 8.0'	NHH-Y-TOP 0 – 5.9'	NHH-Y-BOTTOM 5.9 – 8.5'	NHH-Z-TOP 0 – 5.0'	NHH-Z-BOTTOM 5.0 – 8.7'
% Total Fines (<0.125 mm)	92.4	88	57.5	36.7	87.8	91.1	29.7	90.3	7.9	94.6	80.2
% Fine Sand (0.125 - 0.25 mm)	2	3.3	36.7	63.2	11	7.9	55	6.3	74.3	4.5	18.6
% Medium Sand (0.25 - 0.5 mm)	2.5	5	5.3	0.1	1.2	1	15.1	2	15.2	0.9	1.1
% Coarse Sand (0.5 - 2 mm)	3.1	3.4	0.5	0	0	0	0.2	0.9	2.6	0	0.1
% Total Gravel (>2 mm)	0	0.3	0	0	0	0	0	0.5	0	0	0

Table 15 Sediment chemistry results - Hydrometer grain size

	NHH-A-TOP 0 - 2.2'	NHH-A-BOTTOM 2.2 - 9.9'	NHH-B 0-4.2'	NHH-C-TOP 0 - 2.8'	NHH-C-BOTTOM 2.8 – 8.0'	NHH-D-TOP 0 – 4.8'	NHH-D-BOTTOM 4.8 – 10.3'	NHH-E-TOP 0 – 6.5'	NHH-E-BOTTOM 6.5 – 8.1'	NHH-F-TOP 0 – 3.2'	NHH-F-REP-TOP 0 – 3.2'	NHH-F-BOTTOM 3.2 – 10.5'	NHH-G-TOP 0 – 4.3'	NHH-G-BOTTOM 4.3 – 13.7'	NHH-H-TOP 0 – 5.4'	NHH-H-REP-TOP 0 – 5.4'	NHH-H-BOTTOM 5.4 – 7.7'	NHH-I-TOP 0 – 0.7'	NHH-I-BOTTOM 0.7' – 2.5'	NHH-J
0 – 5.4' % Clay Fine	0.1 U	0.1 U	0.1	0.1	1.2	0.3	17.8	0.8	1.4	1.3	1	10	8	10.6	10.5	8.2	0.8	0.5	0.7	53.9
0.9																				
% Silt Fine	7	2.1	18	22.9	43.8	65.9	82.6	91.7	81.2	66.1	74	84.9	64.9	70.7	67	77.1	69	74.1	31.1	78.2
% Fine Sand	39.4	62.6	54.8	54.2	42.1	8.5	10.5	2.5	6.2	5.7	6.2	2.1	6.7	10.3	8.4	8.6	24.1	9.5	10.3	7.2
% Medium Sand	44.9	32.9	22.3	15.3	10.4	6.7	5.2	2.5	10.7	9	8.8	2.7	9.5	6.8	6.9	8.1	6	11.4	4	4.7
% Coarse Sand	6.8	2.3	2.6	3	2.8	0.9	0.9	1.9	0.6	18.2	1	2.3	8	1.7	9.5	4.9	0.4	4.3	0.7	6.5
% Fine Gravel	1.9	0.1	2.2	3.4	0.6	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.3	0.1 U	0.1 U	0.5	0.1 U	0.1 U	0.1 U	2.5
% Coarse Gravel	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

	NHH-K-TOP 0 – 5.5'	NHH-K-BOTTOM 5.5 – 8.2'	NHH-L 0 – 6.7'	NHH-M 0 – 6.8'	NHH-N-TOP 0 – 6.0'	NHH-N-BOTTOM 6.0 – 7.5'	NHH-O-TOP 0 – 8.3'	NHH-O-BOTTOM 8.7 – 10.9'	NHH-P-TOP 0 – 5.8'	NHH-P-BOTTOM 5.8 – 12.3'	NHH-Q-TOP 0 – 5.3'	NHH-Q-BOTTOM 5.3 – 29.4'	NHH-R-TOP 0 – 4.2'	NHH-R-BOTTOM 4.2 – 7.7'	NHH-S-TOP 0 – 6.0'	NHH-S-BOTTOM 6.0 – 6.4'	NHH-T-TOP 0 – 4.8'	NHH-T-BOTTOM 4.8 – 16.3'	NHH-U-TOP 0 – 5.8'	NHH-U-BOTTOM 5.8 – 30.0'
% Clay Fine	30.2	0.1 U	5.2	46	2.4	0.1	8.9	0.2	1.2	5.8	16.9	12.1	28.4	23.3	0.7	0.2	17.2	35.5	35.5	19.9
% Silt Fine	51.6	2.1	62.2	52	38.2	15.2	88.8	24.4	96.9	92.7	82	84.7	52.6	68.2	60.9	28.4	81.8	62.4	63	75.4
% Fine Sand	8.1	62.6	9.6	1.5	23.9	82.5	1.7	74.2	1.5	1.3	0.9	1.8	6.1	4.2	9.5	68	1	1.4	1.1	3.2
% Medium Sand	9.4	32.9	20.2	0.5	26	2.2	0.6	1	0.4	0.2	0.2	1.3	6.4	1.7	9.3	3	0.1 U	0.7	0.3	1.4
% Coarse Sand	0.7	2.3	2.8	0.1 U	5.8	0.1 U	0.1 U	0.2	0.1 U	0.1 U	0.1 U	0.1	6.3	2.6	14.7	0.4	0.1 U	0.1 U	0.1	0.1
% Fine Gravel	0.1 U	0.1	0.1 U	0.1 U	3.7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2	0.1 U	4.9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
% Coarse Gravel	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

	NHH-V-TOP 0 – 4.8'	NHH-V-BOTTOM 4.8 – 8.6'	NHH-W-TOP 0 – 5.5'	NHH-W-BOTTOM 5.5 – 8.2'	NHH-X-TOP 0 – 5.2'	NHH-X-REP-TOP 0 – 5.2'	NHH-X-BOTTOM 5.2 – 8.0'	NHH-Y-TOP 0 – 5.9'	NHH-Y-BOTTOM 5.9 – 8.5'	NHH-Z-TOP 0 – 5.0'	NHH-Z-BOTTOM 5.0 – 8.7'
% Clay Fine	18.6	23.3	11.3	2.9	8.9	9.6	14.4	1.5	0.1	1.4	1
% Silt Fine	58	65.4	35.3	27.3	83.4	82.6	21.1	93.9	10.4	93.8	79
% Fine Sand	4.4	3.2	48.2	69.7	6.9	7.1	50.8	3.7	66.1	4	19.1
% Medium Sand	5.4	3	3.1	0.1	0.8	0.7	13.5	0.9	12.1	0.8	0.9
% Coarse Sand	8.8	4	2.1	0.1 U	0.1 U	0.1 U	0.2	0.1 U	1.5	0.1 U	0.1 U
% Fine Gravel	4.8	1.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	9.8	0.1 U	0.1 U
% Coarse Gravel	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

U - Not detected at the laboratory RL.

Table 16 Sediment chemistry results - Solids, moisture, and total organic carbon

	NHH-A-TOP 0 - 2.2'	NHH-A-BOTTOM 2.2 - 9.9'	NHH-B 0-4.2'	NHH-C-TOP 0 - 2.8'	NHH-C-BOTTOM 2.8 – 8.0'	NHH-D-TOP 0 – 4.8'	NHH-D-BOTTOM 4.8 – 10.3'	NHH-E-TOP 0 – 6.5'	NHH-E-BOTTOM 6.5 – 8.1'	NHH-F-TOP 0 – 3.2'	NHH-F-REP-TOP 0 – 3.2'	NHH-F-BOTTOM 3.2 – 10.5'	NHH-G-TOP 0 – 4.3'	NHH-G-BOTTOM 4.3 – 13.7'	NHH-H-TOP 0 – 5.4'	NHH-H-REP-TOP 0 – 5.4'	NHH-H-BOTTOM 5.4 – 7.7'	NHH-I-TOP 0 – 0.7'	NHH-I-BOTTOM 0.7' – 2.5'	NHH-J 0 – 5.4'
Total Solids (%)	60.7	NS	69	70.4	62	60	66	43.9	46.6	40.2	43.1	44.6	41.5	47.4	48.9	46.8	71.1	48.4	48	41.6
Moisture %)	39.3	NS	31	29.6	38	40	34	56.1	53.4	59.8	56.9	55.4	58.5	52.6	51.1	53.2	28.9	51.6	52	58.4
Total Organic Carbon (%)	0.21	NS	1.2	0.42	0.57	1.1	1.2	2.2	2.3	1.9	1.9	2.0	1.7	1.4	1.9	2.1	0.8	1.5	1.3	2.4

	NHH-K-TOP 0 – 5.5'	NHH-K-BOTTOM 5.5 – 8.2'	NHH-L 0 – 6.7'	NHH-M 0 – 6.8'	NHH-N-TOP 0 – 6.0'	NHH-N-BOTTOM 6.0 – 7.5'	NHH-O-TOP 0 – 8.3'	NHH-O-BOTTOM 8.7 – 10.9'	NHH-P-TOP 0 – 5.8'	NHH-P-BOTTOM 5.8 – 12.3'	NHH-Q-TOP 0 – 5.3'	NHH-Q-BOTTOM 5.3 – 29.4'	NHH-R-TOP 0 – 4.2'	NHH-R-BOTTOM 4.2 – 7.7'	NHH-S-TOP 0 – 6.0'	NHH-S-BOTTOM 6.0 – 6.4'	NHH-T-TOP 0 – 4.8'	NHH-T-BOTTOM 4.8 – 16.3'	NHH-U-TOP 0 – 5.8'	NHH-U-BOTTOM 5.8 – 30.0'
Total Solids (%)	47.6	NS	45.6	38.2	64.2	NS	40.4	NS	42.7	42.2	36	42.6	37.3	44.1	40	NS	34.4	41.4	35.6	41.1
Moisture %)	52.4	NS	54.4	61.8	35.8	NS	59.6	NS	57.3	57.8	64	57.4	62.7	55.9	60	NS	65.6	58.6	64.4	58.9
Total Organic Carbon (%)	1.8	NS	2.2	2.4	1.2	NS	2.4	NS	3.1	2.9	2.7	3.8	2.8	2.9	2.6	NS	2.8	3.6	2.9	3.5

	NHH-V-TOP 0 – 4.8'	NHH-V-BOTTOM 4.8 – 8.6'	NHH-W-TOP 0 – 5.5'	NHH-W-BOTTOM 5.5 – 8.2'	NHH-X-TOP 0 – 5.2'	NHH-X-REP-TOP 0 – 5.2'	NHH-X-BOTTOM 5.2 – 8.0'	NHH-Y-TOP 0 – 5.9'	NHH-Y-BOTTOM 5.9 – 8.5'	NHH-Z-TOP 0 – 5.0'	NHH-Z-BOTTOM 5.0 – 8.7'
Total Solids (%)	40.8	41.4	46.1	NS	36	35.2	80.2	36.5	NS	37	44.7
Moisture %)	59.2	58.6	53.9	NS	64	64.8	19.8	63.5	NS	63	55.3
Total Organic Carbon (%)	3.1	3.8	2.7	NS	4.0	4.4	0.3	3.7	NS	3.0	3.8

Table 17 Sediment chemistry results - Metals

	NHH-A-TOP	NHH-B	NHH-C-TOP	NHH-C- BOTTOM	NHH-D-TOP	NHH-D- BOTTOM	NHH-E-TOP	NHH-E- BOTTOM	NHH-F-TOP	NHH-F-REP- TOP	NHH-F- BOTTOM	NHH-G-TOP	NHH-G- BOTTOM	NHH-H-TOP	NHH-H-REP- TOP	NHH-H- BOTTOM	NHH-I-TOP	NHH-I- BOTTOM	NHH-J	NHH-K-TOP	NHH-L	NHH-M								
Analyte	0 - 2.2'	0-4.2'	0 - 2.8'	2.8 – 8.0'	0 – 4.8'	4.8 – 10.3'	0 – 6.5'	6.5 – 8.1'	0 – 3.2'	0 – 3.2'	3.2 – 10.5'	0 – 4.3'	4.3 – 13.7'	0 – 5.4'	0 – 5.4'	5.4 – 7.7'	0 – 0.7'	0.7' – 2.5'	0 – 5.4'	0 – 5.5'	0 - 6.7'	0 - 6.8'								
Total Metals (mg/kg)																														
Arsenic, Total	3.41	3.12	4.1	6.14	3.61	7.01	9.2	9.69	9.49	8.51	11.1	12.1	10.8	10.4	10.7	4.58	8.18	10.3	11.8	8.12	13.8	9.36								
Cadmium, Total	0.077	0.069	0.064	0.071	0.064	0.102	0.889	1.44	0.556	0.644	1.12	0.736	0.188	0.86	0.974	0.134	0.143	0.155	1.6	0.402	0.991	0.763								
Chromium, Total	10.6	10.3	13	16.1	10.8	20.9	88.1	91.9	69.8	72.2	94.2	67.4	30.2	69.4	80.9	12.4	22.8	30.6	84.8	47.5	52.6	64.2								
Copper, Total	10	5.41	8.41	6.45	8.98	7.74	106	140	81.4	96.7	184	118	12.5	80	96.2	6.63	11	12.2	150	57.4	170	92.6								
Lead, Total	6.76	3.76	5.77	5.2	5.8	6.83	64.2	58.1	51.2	48.8	63.4	51.3	10.6	47	56.6	6.12	9.33	10.9	71.8	37.6	157	55.8								
Mercury, Total	0.028	0.02	U	0.015	J	0.021	U	0.031	0.018	U	0.39	0.499	0.27	0.241	0.49	0.457	0.028	U	0.189	0.331	0.003	J	0.018	J	0.023	U	0.925	0.144	1.12	0.274
Nickel, Total	5.3	6.36	7.4	10.4	5.37	13.5	29	21.4	24.6	27.4	24.5	23.2	19.7	22.7	24.9	7.54	14.7	19.9	25.8	19.4	22.1	23.2								
Zinc, Total	29.3	21	31.5	32.8	26.3	42.9	202	223	184	186	246	183	64.2	155	183	24.5	50.7	64.3	223	132	212	170								

	NHH-N-TOP	NHH-O-TOP	NHH-P-TOP	NHH-P-BOTTOM	NHH-Q-TOP	NHH-Q-BOTTOM	NHH-R-TOP	NHH-R-BOTTOM	NHH-S-TOP	NHH-T-TOP	NHH-T-BOTTOM	NHH-U-TOP	NHH-U-BOTTOM	NHH-V-TOP	NHH-V-BOTTOM	NHH-W-TOP	NHH-X-TOP	NHH-X-REP-TOP	NHH-X-BOTTOM	NHH-Y-TOP	NHH-Z-TOP	NHH-Z-BOTTOM	
Analyte	0 – 6.0'	0 – 8.3'	0 – 5.8'	5.8 – 12.3'	0 – 5.3'	5.3 – 29.4'	0 – 4.2'	4.2 – 7.7'	0 – 6.0'	0 – 4.8'	4.8 – 16.3'	0 – 5.8'	5.8 – 30.0'	0 – 4.8'	4.8 – 8.6'	0 – 5.5'	0 – 5.2'	0 – 5.2'	5.2 – 8.0'	0 – 5.9'	0 – 5.0'	5.0 – 8.7'	
Total Metals (mg/kg)																							
Arsenic, Total	5.58	9.16	10.4	10.6	9.77	14.5	10.6	10.3	11.5	8.77	11.2	8.98	12.5	11.7	13.5	7.14	9.98	10.9	2.1	9.83	9.9	12.2	
Cadmium, Total	1.05	0.691	2.37	2.43	1.05	6.71	0.831	1.14	3.06	0.886	4.51	1.02	6.05	2.68	5.54	1.84	4.42	5.34	0.056	1.7	1.06	7.85	
Chromium, Total	50.2	58.8	107	108	70.6	210	67.9	82.8	143	61.9	153	69.8	181	116	178	71	133	140	6.98	69.8	65	195	
Copper, Total	74.3	81	215	199	121	376	98.8	135	206	102	266	118	325	198	289	118	234	275	3.47	125	109	320	
Lead, Total	35.5	48.5	99.8	102	67.7	151	58.5	76.8	113	62	193	64.8	174	123	188	59.8	175	211	3.15	71.8	63.6	177	
Mercury, Total	0.202	0.252	0.608	0.621	0.282	1.29	0.25	0.325	0.543	0.254	0.611	0.28	1.04	0.432	0.805	0.437	0.654	0.704	0.017	U	0.292	0.728	0.826
Nickel, Total	14.3	21.9	30	29.7	26.7	35.6	26.2	28.8	31.6	24	43.6	26.5	41.6	36.3	47.3	19.6	37.1	40.3	4.32	25	23.6	41.9	
Zinc, Total	113	159	275	281	211	588	193	221	338	183	358	206	490	288	449	183	330	390	13.9	193	191	534	

J - Estimated value.
U - Not detected at the laboratory RL.

Table 18 Sediment chemistry results - PAHs

Analyte	NHH-A-TOP		NHH-B		NHH-C-TOP		NHH-C-		NHH-D-TOP		NHH-D-		NHH-E-		NHH-F-REP		NHH-F-		NHH-G-		NHH-H-REP-		NHH-H-		NHH-I-		NHH-J	NHH-K-TOP	NHH-L	NHH-M													
	0 - 2.2'		0-4.2'		0 - 2.8'		2.8 - 8.0'		0 - 4.8'		4.8 - 10.3'		0 - 6.5'		6.5 - 8.1'		0 - 3.2'		0 - 3.2'		3.2 - 10.5'		0 - 4.3'		4.3 - 13.7'						0 - 5.4'		0 - 5.4'		5.4 - 7.7'		0 - 0.7'		0.7' - 2.5'		0 - 5.4'		0 - 5.5'
Polycyclic Aromatic Hydrocarbons (ug/kg)																																											
Naphthalene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	42.3		113		36.3		41.4		116		83.8		9.93	U	35.7		42.7		6.86	U	9.61	U	10	U	207		26.8		532		76
Acenaphthylene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	45.6		78.9		41.7		49.6		60.7		62.3		9.93	U	26.6		36		6.86	U	9.61	U	10	U	81.2		21.3		109		64.7
Acenaphthene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	9.42	J	22.2		20.4		6.58	J	24		12.3		9.93	U	9.53	J	9.37	J	6.86	U	9.61	U	10	U	18.2		5.43	J	38.4		22.7
Fluorene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	19.1		58.8		27.3		14.1		36.3		24.9		9.93	U	18.6		18.6		6.86	U	9.61	U	10	U	37.5		10.1	J	53.1		23.1
Phenanthrene	5.18	J	6.81	U	6.02	J	7.57	U	7.94	U	6.92	U	125		298		134		95.1		234		194		9.93	U	108		114		6.86	U	5.41	J	10	U	204		63		370		177
Anthracene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	36.1		65		44		52.1		67.1		69.6		9.93	U	26.3		31.8		6.86	U	9.61	U	10	U	92.9		20.8		148		68
Fluoranthene	10.7		6.81	U	8.65		7.57	U	7.94	U	6.92	U	276		517		226		259		457		465		9.93	U	227		286		6.86	U	7.31	J	10	U	537		185		900		550
Pyrene	17.6		6.81	U	12.6		7.57	U	7.94	U	6.92	U	254		456		269		297		469		495		5.23	J	215		277		6.86	U	8.25	J	10	U	527		179		929		483
Benz(a)anthracene	6.64	J	6.81	U	5.97	J	7.57	U	7.94	U	6.92	U	135		233		120		127		243		245		9.93	U	124		149		6.86	U	9.61	U	10	U	298		98.1		565		276
Chrysene	7.58	J	6.81	U	7.06		7.57	U	7.94	U	6.92	U	169		290		167		176		263		277		9.93	U	108		142		6.86	U	5.52	J	10	U	321		98.9		589		283
Benzo(b)fluoranthene	8.12		6.81	U	10.9		7.57	U	7.94	U	6.92	U	213		339		217		229		323		338		9.93	U	208		224		6.86	U	6.09	J	10	U	391		171		566		379
Benzo(k)fluoranthene	8.93		6.81	U	6.81		7.57	U	7.94	U	6.92	U	138		183		161		178		184		235		9.93	U	63.4		124		6.86	U	9.61	U	10	U	309		84.3		404		246
Benzo(a)pyrene	8.08		6.81	U	8.58		7.57	U	7.94	U	6.92	U	182		276		181		198		235		278		9.93	U	109		148		6.86	U	9.61	U	10	U	354		107		570		290
Indeno(1,2,3-cd)pyrene	6.56	J	6.81	U	7.17		7.57	U	7.94	U	6.92	U	152		204		146		158		194		215		9.93	U	119		152		6.86	U	9.61	U	10	U	290		97.6		365		226
Dibenz(a,h)anthracene	8.06	U	6.81	U	6.58	U	7.57	U	7.94	U	6.92	U	34.9		47.8		42.5		45		49.3		52.3		9.93	U	22.6		27.6		6.86	U	9.61	U	10	U	64.1		25.8		85.1		53.7
Benzo(ghi)perylene	7.84	J	6.81	U	8.33		7.57	U	7.94	U	6.92	U	172		246		170		183		229		247		9.93	U	119		157		6.86	U	5.01	J	10	U	302		115		446		254
Total LMW PAHs	45.5	J	40.9	U	38.9		45.4	U	47.6	U	41.5	U	278		636		304		259		538		447		59.6	U	225		252		41.2	U	53		60.0	U	641		147		1251		432
Total HMW PAHs	90.1	J	68.1	U	82.7		75.7	U	79.4	U	69.2	U	1726		2792		1700		1850		2646		2847		94.6		1315		1687		68.6	U	80.2		100	U	3393		1162		5419		3041
Total PAHs	136		109	U	122		121	U	127	U	111	U	2003		3428		2003		2109		3184		3294		154		1540		1939		110	U	134		160	U	4034		1309		6670		3472

	NHH-N-TOP		NHH-O-TOP	NHH-P-TOP	NHH-P-BOTTOM		NHH-Q-TOP	NHH-Q-BOTTOM		NHH-R-TOP	NHH-T-TOP	NHH-T-BOTTOM		NHH-U-TOP	NHH-U-BOTTOM		NHH-V-TOP	NHH-V-BOTTOM		NHH-W-TOP	NHH-X-TOP	NHH-X-REP-TOP		NHH-X-BOTTOM	NHH-Y-TOP	NHH-Z-TOP	NHH-Z-BOTTOM	
Analyte	0 – 6.0'	0 – 8.3'	0 – 5.8'	5.8 – 12.3'	0 – 5.3'	5.3 – 29.4'	0 – 4.2'	4.2 – 7.7'	0 – 6.0'	0 – 4.8'	4.8 – 16.3'	0 – 5.8'	5.8 – 30.0'	0 – 4.8'	4.8 – 8.6'	0 – 5.5'	0 – 5.2'	0 – 5.2'	5.2 – 8.0'	0 – 5.9'	0 – 5.0'	5.0 – 8.7'						
Polycyclic Aromatic Hydrocarbons (ug/kg)																												
Naphthalene	153	228	253	234	68	1460	52.6	62.8	381	71.4	175	82.5	771	117	1340	354	256	308	5.91	U	69.5	86.1	740					
Acenaphthylene	44.7	58.1	142	128	72.9	238	49.4	55.6	79.4	79.9	151	85.7	203	106	199	100	221	275	5.91	U	83.2	81.6	199					
Acenaphthene	13.2	26.8	47.4	42.3	15	81.1	15.8	17.3	40.8	27.2	53.1	32.3	86.3	52.8	67.1	37.4	303	327	5.91	U	36.6	27.2	142					
Fluorene	17.3	24.7	71.1	63.7	18.7	142	24	28.2	77.9	18.6	75.4	26.4	154	48.9	178	53.6	263	335	5.91	U	30.8	28.8	271					
Phenanthrene	122	172	488	480	190	1060	140	146	326	213	498	215	909	349	643	290	924	1270	5.91	U	227	208	1230					
Anthracene	37	58	153	156	85.5	255	64.5	76.3	91.6	82.7	147	105	233	121	221	143	364	449	5.91	U	98.7	92.7	246					
Fluoranthene	292	479	1290	1320	768	1710	462	468	835	814	1300	982	1600	979	1400	887	3210	3360	5.91	U	1190	935	1810					
Pyrene	258	424	1020	952	600	1480	386	413	706	694	1090	724	1290	803	1070	672	2240	2550	5.91	U	948	774	1560					
Benz(a)anthracene	141	234	574	526	321	788	200	219	403	373	602	376	690	462	621	376	1140	1400	5.91	U	545	429	833					
Chrysene	143	234	706	676	405	943	263	268	363	379	587	491	815	429	730	436	1040	1240	5.91	U	458	416	791					
Benzo(b)fluoranthene	168	310	792	721	497	912	287	302	583	527	680	528	828	640	824	489	1130	1490	5.91	U	576	530	1050					
Benzo(k)fluoranthene	125	210	471	486	311	663	182	194	234	362	493	400	569	256	456	288	746	736	5.91	U	361	354	578					
Benzo(a)pyrene	142	247	628	585	395	774	256	247	310	392	547	440	684	393	635	390	853	1030	5.91	U	410	389	734					
Indeno(1,2,3-cd)pyrene	104	187	453	432	304	550	215	195	325	301	395	365	484	320	452	285	592	717	5.91	U	290	290	509					
Dibenz(a,h)anthracene	31.8	53.3	133	127	84	159	48.6	47.8	70.4	69.9	113	76.3	143	87	124	80.6	175	207	5.91	U	85.9	67	158					
Benzo(ghi)perylene	119	214	513	479	328	594	226	213	319	350	445	372	570	352	499	313	650	773	5.91	U	327	331	609					
Total LMW PAHs	387	568	1155	1104	450	3236	346	386	997	493	1100	547	2356	795	2648	978	2331	2964	35	U	546	524	2828					
Total HMW PAHs	1524	2592	6580	6304	4013	8573	2526	2567	4148	4262	6252	4754	7673	4721	6811	4217	11776	13503	59	U	5191	4515	8632					
Total PAHs	1911	3160	7735	7408	4463	11809	2872	2953	5145	4755	7352	5301	10029	5516	9459	5195	14107	16467	95	U	5737	5039	11460					

Table 19 Sediment chemistry results - Pesticides

Analyte	NHH-A-TOP		NHH-B		NHH-C-TOP		NHH-C-BOTTOM		NHH-D-TOP		NHH-D-BOTTOM		NHH-E-TOP		NHH-E-BOTTOM		NHH-F-TOP		NHH-F-REP-TOP		NHH-F-BOTTOM		NHH-G-TOP		NHH-G-BOTTOM		NHH-H-TOP		NHH-H-REP-TOP		NHH-H-BOTTOM		NHH-I-TOP		NHH-I-BOTTOM		NHH-J		NHH-K-TOP		NHH-L		NHH-M	
	0-2.2'		0-4.2'		0-2.8'		2.8-8.0'		0-4.8'		4.8-10.3'		0-6.5'		6.5-8.1'		0-3.2'		0-3.2'		3.2-10.5'		0-4.3'		4.3-13.7'		0-5.4'		0-5.4'		5.4-7.7'		0-0.7'		0.7-2.5'		0-5.4'		0-5.5'		0-6.7'		0-6.8'	
Organochlorine Pesticides (ug/kg)																																												
Aldrin	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
cis-Chlordane	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
cis-Nonachlor	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
Dieldrin	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.643	IP	0.563	IP	0.619	IP	0.594	IP	0.536	IP	0.551	U	0.497	U	0.514	IP	0.582	IP	0.343	U	0.48	U	0.503	U	1.04	IP	0.516	U	0.517	U	1.28	U
Endosulfan I	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
Endosulfan II	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	4.03	P	0.516	U	0.517	U	1.48	IP
Endrin	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
gamma-BHC	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
Heptachlor	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
Heptachlor epoxide	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	2.57	U
Hexachlorobenzene	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	2.57	U
Methoxychlor	4.03	U	3.4	U	3.29	U	3.79	U	3.97	U	3.46	U	5.34	U	5.24	U	5.98	U	5.63	U	5.1	U	5.51	U	4.97	U	5.09	U	4.9	U	3.43	U	4.8	U	5.03	U	5.99	U	5.16	U	5.17	U	12.8	U
Oxychlordane	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	2.57	U
Toxaphene	20.2	U	17.1	U	16.5	U	19	U	19.9	U	17.4	U	26.8	U	26.3	U	30	U	28.3	U	25.6	U	27.6	U	24.9	U	25.6	U	24.6	U	17.2	U	24.1	U	25.2	U	30.1	U	25.9	U	26	U	64.5	U
trans-Chlordane	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	1.92		1.46	IP	0.598	U	0.563	U	0.51	U	0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	0.599	U	0.516	U	0.517	U	1.28	U
trans-Nonachlor	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.534	U	0.524	U	0.662		0.563	U	0.701		0.551	U	0.497	U	0.509	U	0.49	U	0.343	U	0.48	U	0.503	U	1.06		0.516	U	0.517	U	1.33	
4,4'-DDD	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	0.756		1.68		0.8		0.902		1.56		0.58		0.497	U	0.688		1.05		0.343	U	0.48	U	0.503	U	1.17		0.572		0.517	U	1.28	U
4,4'-DDE	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	2.92		4.75		2.14		2.27		4.1		1.56		0.497	U	2.28		2.97		0.343	U	0.48	U	0.503	U	3.57		1.18		0.517	U	3.17	
4,4'-DDT	0.403	U	0.34	U	0.329	U	0.379	U	0.397	U	0.346	U	2.1	P	0.524	U	0.776	IP	0.698	IP	1.46	P	0.551	U	0.497	U	1.73	P	2.34	P	0.343	U	0.48	U	0.503	U	3.84	P	0.743		0.517	U	1.58	IP
Total DDT	1.2	U	1.0	U	0.99	U	1.1	U	1.2	U	1.0	U	5.8		7.0		3.7		3.9		7.1		2.7		1.5	U	4.7		6.4		1.0	U	1.4	U	1.5	U	8.6		2.5		1.6	U	6.0	

Analyte	NHH-N-TOP		NHH-O-TOP		NHH-P-TOP		NHH-I-BOTTOM		NHH-Q-TOP		NHH-Q-BOTTOM		NHH-R-TOP		NHH-R-BOTTOM		NHH-S-TOP		NHH-T-TOP		NHH-T-BOTTOM		NHH-U-TOP		NHH-U-BOTTOM		NHH-V-TOP		NHH-V-BOTTOM		NHH-W-TOP		NHH-X-TOP		NHH-X-REP-TOP		NHH-X-BOTTOM		NHH-Y-TOP		NHH-Z-TOP		NHH-Z-BOTTOM	
	0 – 6.0'		0 – 8.3'		0 – 5.8'		5.8 – 12.3'		0 – 5.3'		5.3 – 29.4'		0 – 4.2'		4.2 – 7.7'		0 – 6.0'		0 – 4.8'		4.8 – 16.3'		0 – 5.8'		5.8 – 30.0'		0 – 4.8'		4.8 – 8.6'		0 – 5.5'		0 – 5.2'		0 – 5.2'		5.2 – 8.0'		0 – 5.9'		0 – 5.0'		5.0 – 8.7'	
Organochlorine Pesticides (ug/kg)																																												
Aldrin	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	1.36	U	1.35	U	0.295	U	1.33	U	1.23	U	1.03	U
cis-Chlordane	0.383	U	1.17	U	1.93		1.3		1.8		2.31		0.792		0.855	P	1.3		1.34	U	4.01		1.59		2.41		2.41		4.12		1.6		3.92		6.99		0.295	U	1.33	U	1.23	U	3.96	
cis-Nonachlor	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	1.36	U	1.35	U	0.295	U	1.33	U	1.23	U	1.03	U
Dieldrin	0.552	IP	1.17	U	2.12	IP	2.05	IP	1.38	IP	8.3	IP	0.754	IP	0.752	IP	3.24	IP	1.43	IP	3.52	IP	1.4	U	8.56	IP	1.83	IP	6.02	IP	2.06	IP	3.88	IP	5.52	IP	0.295	U	1.45	IP	1.23	U	7.38	IP
Endosulfan I	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	1.36	U	1.35	U	0.295	U	1.33	U	1.23	U	1.03	U
Endosulfan II	0.645	IP	1.17	U	3.73	IP	2.77	IP	2.21	I	2.33	IP	2.2	P	3.31	P	11.4	P	1.92	IP	10.3	IP	1.64	IP	11	IP	6.92	IP	25.1	P	3.59	IP	23.3	I	30.5	I	0.295	U	2.08	IP	1.23	U	6.61	IP
Endrin	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	1.36	U	1.35	U	0.295	U	1.33	U	1.23	U	1.03	U
gamma-BHC	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	3.66		5.25		0.295	U	1.33	U	1.23	U	1.03	U
Heptachlor	0.383	U	1.17	U	1.11	U	1.1	U	1.36	U	1.13	U	0.64	U	0.524	U	0.593	U	1.34	U	1.12	U	1.4	U	1.17	U	1.14	U	1.19	U	1.08	U	1.36	U	1.35	U	0.295	U	1.33	U	1.23	U	1.03	U
Heptachlor epoxide	0.766	U	2.34	U	2.23	U	2.19	U	2.71	U	2.26	U	1.28	U	1.05	U	1.18	U	2.68	U	2.23	U	2.79	U	2.35	U	2.29	U	2.38	U	2.16	U	2.72	U	2.7	U	0.591	U	2.67	U	2.46	U	2.05	U
Hexachlorobenzene	0.766	U	2.34	U	2.23	U	2.19	U	2.71	U	2.26	U	1.28	U	1.05	U	1.18	U	2.68	U	2.23	U	2.79	U	2.35	U	2.29	U	2.38	U	2.16	U	2.72	U	2.7	U	0.591	U	2.67	U	2.46	U	2.05	U
Methoxychlor	3.83	U	11.7	U	11.1	U	11	U	13.6	U	11.3	U	6.4	U	5.24	U	5.93	U	13.4	U	11.2	U	14	U	11.7	U	11.4	U	11.9	U	10.8	U	13.6	U	13.5	U	2.95	U	13.3	U	12.3	U	10.3	U
Oxychlordane	0.766	U	2.34	U	2.23	U	2.19	U	2.71	U	2.26	U	1.28	U	1.05	U	1.18	U	2.68	U	2.23	U	2.79	U	2.35	U	2.29	U	2.38	U	2.16	U	2.72	U	2.7	U	0.591	U	2.67	U	2.46	U	2.05	U
Toxaphene	19.2	U	58.6	U	55.9	U	55	U	68	U	56.7	U	32.1	U	26.3	U	29.8	U	67.4	U	56	U	70.1	U	58.9	U	57.5	U	59.6	U	54.1	U	68.3	U	67.8	U	14.8	U	67	U	61.8	U	51.5	U
trans-Chlordane	0.383	U	1.17	U	1.11	U	15	P	1.36	U	18.3	P	8.52	P	13.3	P	0.593	U	1.34	U	1.12	U	9.1	P	103	P	77.9	P	114	P	1.08	U	132	P	146	P	0.295	U	1.33	U	1.23	U	108	P
trans-Nonachlor	0.515		1.17	U	2.18		1.98		1.55		5.15	P	1.12		1.36	P	2.55		1.66		6.28	P	1.56		5.8		5.15	P	7.99	P	2.57		10.2	P	12.4	P	0.295	U	1.76		1.23	U	6.07	
4,4'-DDD	0.857		1.17	U	1.8		1.74		1.39		9.39	P	1.19		1.18		1.72		1.44		3.32		1.4	U	8.15	P	2.25		5.27		1.64	I	3.22		5.56		0.295	U	1.51		1.23	U	6.62	
4,4'-DDE	2.96		2.22		5.62		5.32		3.79		21.5		2.2		2.71		8.16		4.56	P	7.72		5.79	P	18.2		4.8		14.7		5.43		7.83		11.1		0.295	U	3.32		1.88		13.9	
4,4'-DDT	1.24	IP	1.19	IP	4.15	IP	2.98	IP	2.03	IP	4.12	IP	1.92		2.57		14.4	P	1.69	IP	11.1		1.8	IP	10.9	IP	9.17	P	14.5		4.65	IP	17.9		20.3		0.295	U	2.54	I	1.57	I	11.5	IP
Total DDT	5.1		4.6		11.6		10.0		7.2		35.0		5.3		6.5		24.3		7.7		22.1		9.0		37.3		16.2		34.5		11.7		29.0		37.0		0.89	U	7.4		4.7		32.0	

Table 20 Sediment chemistry results - PCBs

Analyte	NHH-A-TOP		NHH-B		NHH-C-TOP		NHH-C-BOTTOM		NHH-D-TOP		NHH-D-BOTTOM		NHH-E-TOP		NHH-E-BOTTOM		NHH-F-TOP		NHH-F-REP-TOP		NHH-F-BOTTOM		NHH-G-TOP		NHH-G-BOTTOM		NHH-H-TOP		NHH-H-REP-TOP		NHH-H-BOTTOM		NHH-I-TOP		NHH-I-BOTTOM		NHH-J		NHH-K-TOP		NHH-L		NHH-M		
	0 - 2.2'		0-4.2'		0 - 2.8'		2.8 - 8.0'		0 - 4.8'		4.8 - 10.3'		0 - 6.5'		6.5 - 8.1'		0 - 3.2'		0 - 3.2'		3.2 - 10.5'		0 - 4.3'		4.3 - 13.7'		0 - 5.4'		0 - 5.4'		5.4 - 7.7'		0 - 0.7'		0.7' - 2.5'		0 - 5.4'		0 - 5.5'		0 - 6.7'		0 - 6.8'		
Polychlorinated Biphenyl Congeners (ug/kg)																																													
PCB 8	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.553	J	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	0.838	J	
PCB 18	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	0.955	J	2.27		1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.17		0.847	J	0.686	U	0.961	U	1	U	1.41		1.03	U	1.03	U	1.13	J	
PCB 28	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.29		1.78		1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	0.862	J	0.972	J	0.686	U	0.961	U	1	U	2.04		1.03	U	1.03	U	0.865	J	
PCB 44	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	2.6		4.46		1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.92		2.1		0.686	U	0.961	U	1	U	3.54		0.675	J	1.03	U	1.95		
PCB 49	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	2.31		5.33		1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.45		2.15		0.686	U	0.961	U	1	U	2.45		1.03	U	1.03	U	1.57		
PCB 52	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	3.16		5.05		1.97		2.89		1.02	U	1.1	U	0.993	U	2.56		3.1		0.686	U	0.961	U	1	U	4.93		0.783	J	1.03	U	2.55		
PCB 66	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	2.55		4.15		1.95		2.22		1.02	U	1.1	U	0.993	U	1.47		2.32		0.686	U	0.961	U	1	U	3.31		0.815	J	1.03	U	1.86		
PCB 87	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	0.683	J	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.636	J	0.686	U	0.961	U	1	U	2.04		1.03	U	1.03	U	1.28	U	
PCB 101	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	3.78		6.87		2.88		3.33		2.06		2.6		0.993	U	2.73		3.45		0.686	U	0.961	U	1	U	5.33		1.03	U	1.03	U	3.05		
PCB 105	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	0.878	J	1.57		1.23		1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	6.57		1.03	U	1.03	U	1.28	U	
PCB 118	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	3.8		5.16		3.06		3.44		3.8		1.1	U	0.993	U	2.58		2.65		0.686	U	0.961	U	1	U	5.51		1.4		0.621	J	2.68		
PCB 128	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.26		1.08		0.889	J	1.13		1.02	U	1.1	U	0.993	U	1.02	U	0.614	J	0.686	U	0.961	U	1	U	1.26		1.03	U	1.03	U	0.658	J	
PCB 138	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	3.72		4.85		4.13		5.06		2.95		3.4		0.993	U	3.14		3.97		0.686	U	0.961	U	1	U	6.85		1.6		1.03	U	3.46		
PCB 153	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	3.85		6.28		3.58		3.91		2.87		3.04		0.993	U	3.43		3.97		0.686	U	0.961	U	1	U	5.68		1.52		1.03	U	3.27		
PCB 170	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.06	J	1.72		0.979	J	1.33		0.605	J	1.1	U	0.993	U	0.994	J	1.13		0.686	U	0.961	U	1	U	2.07		1.03	U	1.03	U	0.755	J	
PCB 180	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.81		2.78		1.74		2.24		2.2		2.73		0.993	U	1.53		2.19		0.686	U	0.961	U	1	U	3.46		0.865	J	1.03	U	1.72		
PCB 183	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	0.714	J	1.03	J	1.2	U	0.758	J	0.692	J	0.809	J	0.993	U	0.526	J	0.632	J	0.686	U	0.961	U	1	U	1.09	J	1.03	U	1.03	U	1.28	U	
PCB 184	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	1.05	U	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	1.28	U	
PCB 187	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	2.51		3.36		1.92		2.29		1.78		1.83		0.993	U	2.15		2.57		0.686	U	0.961	U	1	U	3.29		0.648	J	1.03	U	1.43		
PCB 195	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.07	U	0.693	J	1.2	U	1.13	U	1.02	U	1.1	U	0.993	U	1.02	U	0.979	U	0.686	U	0.961	U	1	U	1.2	U	1.03	U	1.03	U	1.28	U	
PCB 206	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	1.18		1.44		1.2	U	0.988	J	2.28		1.86		0.993	U	0.582	J	0.942	J	0.686	U	0.961	U	1	U	1.78		1.03	U	0.945	J	0.67	J	
PCB 209	0.806	U	0.681	U	0.658	U	0.757	U	0.794	U	0.692	U	0.755	J	1.16		1.2	U	0.845	J	3.23		1.7		0.993	U	1.02	U	0.548	J	0.686	U	0.961	U	1	U	1.06	J	1.03	U	0.76	J	0.753	J	
Total PCBs	29.0	U	24.5	U	23.7	U	27.3	U	28.6	U	24.9	U	75.0		110		66.1		73.1		61.9		58.5		35.7	U	60.4		67.8		24.7	U	34.6	U	36	U	121		37.2		35.6		60.4		

Analyte	NHH-N-TOP		NHH-O-TOP		NHH-P-TOP		NHH-Q-BOTTOM		NHH-Q-TOP		NHH-Q-BOTTOM		NHH-R-TOP		NHH-R-BOTTOM		NHH-S-TOP		NHH-T-TOP		NHH-T-BOTTOM		NHH-U-TOP		NHH-U-BOTTOM		NHH-V-TOP		NHH-V-BOTTOM		NHH-W-TOP		NHH-X-TOP		NHH-X-REP-TOP		NHH-X-BOTTOM		NHH-Y-TOP		NHH-Z-TOP		NHH-Z-BOTTOM	
	0 – 6.0'		0 – 8.3'		0 – 5.8'		5.8 – 12.3'		0 – 5.3'		5.3 – 29.4'		0 – 4.2'		4.2 – 7.7'		0 – 6.0'		0 – 4.8'		4.8 – 16.3'		0 – 5.8'		5.8 – 30.0'		0 – 4.8'		4.8 – 8.6'		0 – 5.5'		0 – 5.2'		0 – 5.2'		5.2 – 8.0'		0 – 5.9'		0 – 5.0'		5.0 – 8.7'	
Polychlorinated Biphenyl Congeners (ug/kg)																																												
PCB 8	0.555	J	1.17	U	2.06	2.41	1.5	4.83	1.28	U	0.582	J	2.6	0.719	J	4.47	1.4	U	5.07	2.15	4.08	1.68	12	20	0.591	U	1.33	U	0.65	J	3.91													
PCB 18	1.49		0.948	J	3.95	2.56	1.18	J	17.8	0.709	J	1.13	7.95	0.816	J	13.4	0.983	J	25.1	3.65	11.2	3.57	42.8	137	0.591	U	1.38		1.44	17.2														
PCB 28	1.23		0.905	J	3.98	3.62	1.68	18.3	1.04	J	1.7	5.83	0.884	J	22.2	4.39	11.7	2.94	10.3	5.22	69.5	145	0.591	U	2.97		1.31	32.5																
PCB 44	2.59		1.52		7.98	8.39	1.75	36.5	2		3.07	16.4	2.05	15	1.94	43.9	9.29	2.05	22	9.29	46.5	90	0.591	U	2.22		2.13	33.6																
PCB 49	2.92		1.62		6.53	5.72	1.62	28.3	1.38		2.68	9.02	1.38	13.8	2	33.7	6.66	20.1	7.74	41.8	87.5	0.591	U	1.87		1.73	21																	
PCB 52	5.17		1.87		10.6	7.28	3.25	40.4	2.98		4.22	13.6	1.86	16.8	3.32	58.4	8.19	28.4	11.3	109	201	0.591	U	3.54		3.03	71.9																	
PCB 66	2.76		2.12		8.08	7.06	2.43	34.5	2.1		2.68	9.84	2.08	9.82	2.34	41.5	4.86	20.3	7.46	18.4	30.4	0.591	U	2.83		2.71	21.4																	
PCB 87	0.72	J	1.17	U	3.56	3.49	1.36	U	18.8	0.842	J	1.05	U	7.16	1.09	J	2.87	0.966	J	16.4	1.34	6.8	3.48	4.69	5.81	0.591	U	0.935	J	0.79	J	7.81												
PCB 101	4.46		3.75		10.5	11.7	4.12	45.6	3.43		3.96	22.6	3.94	11.6	4.6	48.7	8.01	22.8	11.6	26.2	38.6	0.591	U	3.68		3.69	27.3																	
PCB 105	0.766	U	1.17	U	2.58	1.1	U	1.36	U	14.8	1.93	5.87	8.13	2.89	16.6	1.83	21	15	21.2	6.9	42.6	45.6	0.591	U	1.33	U	0.86	J	16.7															
PCB 118	4.18		3.41		9.22	12.1	4.3	43.1	3		4.28	14.7	3.41	11.3	3.95	37.6	4.96	18.8	9.3	18.5	22.4	0.591	U	4.81		3.41	24.2																	
PCB 128	0.766		0.594	J	1.96	2.48	1.3	J	10.6	1.28	U	0.862	J	4.02	0.886	J	2.47	1.23	J	9.63	0.994	J	4.59	3.09	2.82	3.92	0.591	U	1.08	J	0.971	J	4.68											
PCB 138	4.21		4.03		11.4	11.7	4.49	44.1	4.1		4.53	20.2	4.12	13.5	5.18	39.3	7.34	22.1	12.2	20.2	25.2	0.591	U	4.16		4.72	27.4																	
PCB 153	4.56		3.7		10.6	10.4	4.26	36.3	3.14		4.49	17.8	3.73	12.2	4.39	32.6	6.1	20.1	10.7	19.6	22.6	0.591	U	3.95		4.24	23.7																	
PCB 170	0.95		1.02	J	3.35	4.19	1.83	14.3	1.02	J	1.18	6.32	1.08	J	4.17	1.72	13	1.68	7.82	3.78	5.69	6.86	0.591	U	1.41		0.987	J	8.49															
PCB 180	2.52		2		7.82	7.06	2.53	25.5	2.09		2.78	11.2	2.12	8.15	2.88	25.3	4.72	13.4	6.83	14.2	19.2	0.591	U	2.69		2.12	20.9																	
PCB 183	0.737	J	0.649	J	2.22	1.99	0.795	J	6.74	0.667	J	0.684	J	2.54	0.735	J	2.23	0.734	J	6.48	1.38	3.62	1.87	3.3	3.84	0.591	U	0.683	J	0.685	J	4.61												
PCB 184	0.766	U	1.17	U	1.11	1.1	U	1.36	U	1.13	U	1.28	U	1.05	U	1.18	U	1.34	U	2.93	1.4	U	1.61	1.9	3.89	0.847	J	6.76	7.69	0.591	U	1.33	U	1.23	U	2.4								
PCB 187	1.72		1.63		5.2	5.46	2.11	16.2	1.61		2.11	8.9	2.3	7.02	2.06	15.5	2.85	9.36	5.05	10.4	11.4	0.591	U	1.81		1.62	13.1																	
PCB 195	0.766	U	1.17	U	1.12	1.25	1.36	U	3.05	1.28	U	1.05	U	1.13	J	1.34	U	1.16	1.4	U	2.56	1.14	U	1.29	1.27	1.38	1.49	0.591	U	1.33	U	1.23	U	1.79										
PCB 206	0.649	J	0.766	J	3.06	2.89	0.892	J	4.79	0.684	J	0.8	J	2.38	0.866	J	1.81	0.825	J	4.44	1.25	3.25	1.88	3.11	5.18	0.591	U	0.778	J	0.691	J	3.37												
PCB 209	0.852		1.17	U	3.06	2.71	0.859	J	2.25	1.28	U	0.627	J	1.24	0.695	J	1.01	J	0.738	J	1.95	0.852	J	1.77	0.922	J	1.31	J	2.96	0.591	U	1.33	U	0.633	J	1.53								
Total PCBs	80.4		65.9		213	209	82.4	826	69.9		91.8	350	71.6	345	90.4	875	172	486	224	928	1658	21.3	U	85.3		72.9	707																	

Table 21 10 day whole sediment bioassay findings

***Americamysis bahia* percent survival results**

	Replicate Survival at the End of 10 Days Exposure (%)					Mean Survival (%)	Statistically Different from CLDS Reference ¹ ?
	A	B	C	D	E		
Lab Control	85%	90%	90%	100%	95%	92%	--
CLDS Reference	100%	100%	100%	90%	100%	98%	--
Composite 1	70%	85%	80%	95%	100%	86%	Yes
Composite 2	95%	100%	90%	95%	90%	94%	No
Composite 3	90%	75%	100%	95%	90%	90%	No
Composite 4	85%	95%	100%	100%	90%	94%	No
Composite 5	85%	95%	90%	100%	80%	90%	Yes
Composite 6	85%	75%	70%	50%	90%	74%	Yes ²
Composite 7	90%	70%	90%	100%	100%	90%	No
Composite 8	100%	90%	90%	100%	100%	96%	No

***L. plumulosus* percent survival results**

	Replicate Survival at the End of 10 Days Exposure (%)					Mean Survival (%)	Statistically Different from CLDS Reference ¹ ?
	A	B	C	D	E		
Lab Control	90%	95%	95%	95%	95%	94%	--
CLDS Reference	95%	100%	90%	90%	100%	95%	--
Composite 1	95%	100%	85%	100%	95%	95%	No
Composite 2	85%	100%	85%	90%	95%	91%	No
Composite 3	90%	85%	95%	95%	100%	93%	No
Composite 4	100%	100%	95%	95%	90%	96%	No
Composite 5	95%	90%	90%	100%	85%	92%	No
Composite 6	95%	80%	85%	90%	95%	89%	No
Composite 7	90%	100%	100%	90%	100%	96%	No
Composite 8	90%	75%	90%	90%	90%	87%	Yes

1 – Statistically significant difference ($\alpha=0.05$) from CLDS Reference.

2 – Greater than a 20% difference in survival compared to CLDS Reference.

Table 22 Summary of laboratory control performance and assay acceptability criteria – 10-day whole sediment

Endpoint / Measurement	Protocol Criteria	Unit	<i>A. bahia</i>	<i>L. plumulosus</i>
Mean Survival		%	92%	94%
	Laboratory Control $\geq 90\%$	Protocol Met	Yes	Yes
Salinity	Minimum: <i>A. bahia</i> - 28ppt	ppt	29.0	18.8
	<i>L. plumulosus</i> - 18ppt	Protocol Met	Yes	Yes
	Maximum: <i>A. bahia</i> - 32ppt	ppt	31.8	22.3 ^a
	<i>L. plumulosus</i> - 22ppt	Protocol Met	Yes	Yes
Temperature	Mean: 20 \pm 1°C	Daily / Hourly °C	20.5 / 20.8	20.6 / 20.8
	Minimum: 17°C	Daily / Hourly °C	19.5 / 19.6	19.7 / 19.6
	Maximum: 23°C	Daily / Hourly °C	22.1 / 29.6 ^b	22.2 / 29.6 ^b
		Protocol Met	Yes / No ^b	Yes / No ^b

^a The value meets the protocol requirement when rounded to the whole number precision reflected in the method, therefore is not considered a protocol deviation.

^b Refer to Section 3.1.3.1 for a discussion of the deviation.

Table 23 Elutriate chemistry results

Analyte	CLDS Ref		Composite 1		Composite 2		Composite 3		Composite 4		Composite 5		Composite 6		Composite 7		Composite 8	
Total Metals (mg/L)																		
Arsenic, Total	0.0014		0.0194		0.0304		0.0198		0.0425		0.0441		0.026		0.0125		0.0164	
Cadmium, Total	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Chromium, Total	0.001	U	0.001	U	0.0014		0.001	U	0.0017		0.0014		0.002		0.0013		0.0011	
Copper, Total	0.0008		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Hexavalent Chromium	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Lead, Total	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Mercury, Total	0.00001	U	0.00001	U	0.00001	U	0.00001	U	0.00001	U	0.00001	U	0.00001	U	0.00001	U	0.00001	U
Nickel, Total	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.0016		0.0013	
Selenium, Total	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Silver, Total	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Zinc, Total	0.0044		0.0039		0.0104		0.0050		0.0091		0.0052		0.006		0.0076		0.0093	
Organochlorine Pesticides (ug/L)																		
Aldrin	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
alpha-BHC	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.0031		0.002	U
alpha-Chlordane	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
beta-BHC	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Chlorpyrifos	0.002	U	0.002	U	0.002	U	0.0034	T	0.002	U	0.0024	T	0.002	U	0.002	U	0.002	U
cis-Nonachlor	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.0030	T	0.002	U
delta-BHC	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Dieldrin	0.004	U	0.004	U	0.004	U	0.0054	T	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endosulfan I	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endosulfan II	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endosulfan Sulfate	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endrin	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endrin Aldehyde	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.009	T	0.004	U	0.004	U
Endrin Ketone	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.009	T	0.004	U	0.004	U
gamma-BHC (Lindane)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.0023	T	0.002	U
gamma-Chlordane	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.0038	T	0.002	U
Heptachlor	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Heptachlor Epoxide	0.004	T	0.002	U	0.002	U	0.0024	T	0.002	U	0.002	U	0.002	U	0.0037		0.0036	T
Hexachlorobenzene	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Methoxychlor	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Oxychlordane	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Toxaphene	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-Nonachlor	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
4,4-DDD	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
4,4-DDE	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.0058	T	0.004	U
4,4-DDT	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Total DDT	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	0.0138		0.012	U
Pentachlorophenol (ug/L)																		
Pentachlorophenol	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Polychlorinated Biphenyl Congeners (ug/L)																		
PCB 8	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0016		0.0101		0.0011	U
PCB 18	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0071		0.0073		0.0010	J
PCB 28	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0143		0.0253		0.0014	
PCB 44	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0010	J	0.014		0.0217		0.00091	J
PCB 49	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0010	J	0.016		0.023		0.0011	
PCB 52	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	J	0.0014		0.024		0.0413		0.0018	
PCB 66	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.015		0.0223		0.0010	J
PCB 77	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0014	J	0.0020		0.0011	U
PCB 87	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0088		0.0101		0.0011	U
PCB 101	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.00104	J	0.0012		0.028		0.0303		0.0016	
PCB 105	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0067		0.0064		0.0011	U
PCB 118	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0010	J	0.0011	U	0.015		0.0193		0.0011	
PCB 126	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U
PCB 128	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0034		0.0033		0.0011	U
PCB 138	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	J	0.0010	J	0.0227		0.0207		0.0011	J
PCB 153	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0012		0.0010	J	0.0227		0.021		0.0012	J
PCB 170	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0072		0.0061		0.0011	U
PCB 180	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0010	J	0.0011	U	0.0126		0.012		0.0010	J
PCB 183	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0045		0.0041		0.0011	U
PCB 184	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U
PCB 187	0.0013		0.0011	U	0.0011	U	0.0011	U	0.0010	J	0.0011	U	0.0094		0.0079		0.0011	U
PCB 195	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0013		0.0010	J	0.0011	U
PCB 206	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0019		0.0016		0.0011	U
PCB 209	0.001	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0011	U	0.0016		0.0013		0.0011	U
Total PCBs	0.042		0.044	U	0.044	U	0.044	U	0.0435	J	0.0442	J	0.4218	J	0.5241	J	0.0463	J

Results presented are the mean of three replicate samples.
Reporting limit (RL) used to represent non-detects in calculation of replicate means and summations for Total DDX and Total PCBs.
Total PCBs calculated as the sum of the 18 NOAA congeners multiplied by 2.
J – Estimated value.
U – Not detected above the laboratory RL.
T – Compound identification is tentative.

Table 24 SPP bioassay findings

	<i>A. bahia</i>	<i>M. beryllina</i>	<i>A. punctulata</i>	
	LC50 (%)	LC50 (%)	LC50 (%)	EC50 (%)
Composite 1	>100%	>100%	>100%	>100%
Composite 2	>100%	>100%	21%	4%
Composite 3	>100%	>100%	18%	17%
Composite 4	>100%	>100%	18%	15%
Composite 5	>100%	78%	23%	3%
Composite 6	68%	46%	9%	4%
Composite 7	65%	48%	35%	1%
Composite 8	84%	72%	35%	3%

Notes:

Americamysis bahia – survival endpoint

Menidia beryllina – survival endpoint

Arbacia punctulata – survival and development endpoints

Table 25 28 day bioaccumulation bioassay findings

***M. nasuta* percent survival results**

	Replicate Survival at the End of 28 Days Exposure (%)					Mean Survival (%)	Statistically Different from CLDS Reference ¹ ?
	A	B	C	D	E		
Lab Control	97%	97%	100%	97%	97%	97%	--
CLDS Reference	100%	97%	100%	100%	100%	99%	--
Composite 1	100%	97%	93%	100%	97%	97%	No
Composite 2	97%	97%	100%	97%	100%	98%	No
Composite 3	97%	100%	100%	97%	97%	98%	No
Composite 4	100%	100%	100%	93%	100%	99%	No
Composite 5	97%	100%	100%	100%	93%	98%	No
Composite 6	93%	100%	100%	100%	100%	99%	No
Composite 7	97%	100%	100%	97%	100%	99%	No
Composite 8	100%	93%	97%	97%	93%	96%	Yes

***N. virens* percent survival results**

	Replicate Survival at the End of 28 Days Exposure (%)					Mean Survival (%)	Statistically Different from CLDS Reference ¹ ?
	A	B	C	D	E		
Lab Control	90%	95%	95%	85%	95%	92%	--
CLDS Reference	95%	95%	100%	95%	100%	97%	--
Composite 1	100%	85%	100%	100%	95%	96%	No
Composite 2	100%	100%	95%	95%	100%	98%	No
Composite 3	95%	100%	95%	100%	100%	98%	No
Composite 4	85%	100%	95%	95%	100%	95%	No
Composite 5	100%	95%	90%	95%	100%	96%	No
Composite 6	95%	95%	90%	90%	95%	93%	Yes
Composite 7	95%	95%	100%	100%	95%	97%	No
Composite 8	95%	100%	100%	95%	95%	97%	No

1 – Statistically significant difference ($\alpha=0.05$) from CLDS Reference.

No composites showed a greater than 10% difference from the CLDS Reference.

Table 26 Summary of laboratory control performance and assay acceptability criteria – 28-day bioaccumulation bioassay

Endpoint/ Measurement	Protocol Criteria	Unit	<i>M. nasuta</i>	<i>N. virens</i>
Mean Survival	Laboratory control >90%	%	97%	92%
		Protocol Met	Yes	Yes
Tissue Mass	Sufficient for analysis	Protocol Met	Yes	Yes
Salinity	Minimum: 28ppt	ppt	28.1	28.4
		Protocol Met	Yes	Yes
	Maximum: 32ppt	ppt	30.4	30.3
		Protocol Met	Yes	Yes
Temperature	Mean: 12-16°C	Daily/Hourly	12.5 / 12.7	12.4 / 12.7 ^a
	Minimum: 9°C	Daily/Hourly	11.9 / 12.2	11.8 / 12.2 ^a
	Maximum: 15°C	Daily/Hourly	12.8 / 14.1	12.6 / 14.1 ^a
		Protocol Met	Yes	Yes

^a The *M. nasuta* and *N. virens* assays did not run concurrently, the *M. nasuta* assay started and ended 2 days earlier than the *N. virens* assay. However, the shared hourly temperature logger was removed from the temperature-controlled room at the end of the *M. nasuta* assay, two days before the end of the *N. virens* assay, therefore these measurements were not collected. The values reported for *N. virens* are the same as for *M. nasuta*. See Section 3.3.1.1 for a discussion of the protocol deviation.

Table 27 Mean wet weight chemical concentrations and statistical findings for *M.nasuta* tissue

Analyte	CLDS Ref Site		Composite 1		Composite 2		Composite 3		Composite 4		Composite 5		Composite 6		Composite 7		Composite 8	
Total Metals (mg/kg)																		
Arsenic, total	3.2		2.43	NS	2.07	NS	2.15	NS	2.4	NS	2.18	NS	1.65	NS	2.3	NS	2.33	NS
Cadmium, total	0.028	b	0.02	bNS	0.023	bNS	0.025	bNS	0.045	bS	0.037	bNS	0.063	S	0.045	bS	0.042	bNS
Chromium, total	0.245	b	0.146	bNS	0.228	bNS	0.227	bNS	0.416	bNS	0.263	bNS	0.715	S	0.494	bS	0.534	bS
Copper, total	1.87		1.28	NS	1.66	NS	1.48	NS	2.46	NS	3.87	NS	2.99	S	2.62	NS	2.54	S
Lead, total	0.348		0.192	NS	0.3	NS	0.285	NS	0.589	S	0.389	NS	0.824	S	0.701	S	0.683	S
Mercury, total	0.004	ab	0.004	aNS	0.004	abNS	0.004	abNS	0.005	abNS	0.004	aNS	0.004	aNS	0.004	abNS	0.004	abNS
Nickel, total	0.387		0.227	NS	0.278	NS	0.256	NS	0.352	NS	0.333	NS	0.408	NS	0.365	NS	0.392	NS
Zinc, total	11.19		8.39	NS	7.43	NS	8.22	NS	12.23	NS	10.97	NS	12.74	NS	10.59	NS	11.17	NS
Polycyclic Aromatic Hydrocarbons (ug/kg)																		
Naphthalene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.09	ac	8.92	ac	8.97	ac
Acenaphthylene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.09	ac	8.92	ac	8.97	ac
Acenaphthene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.5	abc	9.56	abc	8.97	ac
Fluorene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.09	ac	8.92	ac	8.97	ac
Phenanthrene	9.3	ab	8.99	aNS	9.97	abNS	9.26	aNS	9.99	abNS	10.15	abNS	20.06	bS	16.32	bS	22.18	S
Anthracene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.09	ac	8.92	ac	8.97	ac
Fluoranthene	10.14	ab	8.99	aNS	23.5	bNS/S *	11.76	abNS	56.32	S	41.64	S	76.46	S	69.36	S	92.3	S
Pyrene	10.34	ab	8.99	aNS	23.76	S	11.24	abNS	63.24	S	37.5	S	65	S	57.94	S	74	S
Benzo(a)anthracene	11.22	a	8.99	aNS	13.26	abNS	11.24	abNS	36.28	S	24.9	S	39.8	S	36.3	S	38.66	S
Chrysene	9.15	a	8.99	ac	10.8	abc	9.26	ac	28.9	bc	18	bc	34.24	c	28.64	c	28.36	c
Benzo(b)fluoranthene	9.76	ab	8.99	aNS	10.43	abNS	9.26	aNS	24.82	bS	15	bS	25.66	S	23.38	bS	21.76	bS
Benzo(k)fluoranthene	9.15	a	8.99	ac	9.19	abc	9.26	ac	14.82	bc	8.83	abc	12.03	bc	10.34	abc	10.95	bc
Benzo(a)pyrene	9.15	a	8.99	ac	9.28	abc	9.26	ac	16.16	abc	8.91	abc	14.94	bc	12.07	abc	11.22	bc
Indeno(1,2,3-c,d)pyrene	9.15	a	8.99	ac	18.28	bc	15.5	abc	21.88	c	18.9	c	10.38	abc	10.9	ac	15.24	ac
Dibenz(a,h)anthracene	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.5	ac	9.09	ac	8.92	ac	8.97	ac
Benzo(g,h,i)perylene	9.15	a	8.99	ac	9.11	ac	9.26	ac	9.5	abc	8.5	ac	9.54	abc	8.99	abc	8.97	ac
Total LMW PAHs ¹	55.1		53.9		55.5		55.6		54.9		52.7		65.9		61.6		67.0	
Total HMW PAHs ¹	96.4		89.9		136.7		105.3		280.9		190.7		297.1		266.8		310.4	
Total PAHs ¹	151.4		143.8		192.2		160.9		335.9		243.3		363.1		328.4		377.5	
Organochlorine Pesticides (ug/kg)																		
Aldrin	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
cis-Chlordane	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.609	ac	0.624	ac	0.475	ac
trans-Chlordane	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
cis-Nonachlor	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
trans-Nonachlor	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.535	ac	0.75	ac	1.082	ac
Oxychlordane	0.915	a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.85	ac	0.909	ac	0.892	ac	0.897	ac
Total Chlordanes ¹	2.75		2.7		2.73		2.78		2.7		2.55		2.96		3.16		3.35	
4,4'-DDT	0.458	a	0.449	ac	0.632	ac	0.463	ac	0.449	ac	0.425	ac	0.876	c	0.911	c	0.903	ac
4,4'-DDD	0.458	a	0.449	ac	0.758	ac	0.463	ac	0.449	ac	0.425	ac	0.485	ac	0.459	ac	1.204	ac
4,4'-DDE	0.466	a	0.449	aNS	0.864	aNS	0.519	aNS	0.538	aNS	0.782	S	1.546	S	1.294	S	1.033	S
Total DDT ¹	1.38		1.35		2.25		1.45		1.44		1.63		2.91		2.66		3.14	
Dieldrin	0.458	a	0.449	ac	0.618	ac	0.463	ac	0.449	ac	0.425	ac	0.714	c	0.629	ac	0.503	c
alpha-Endosulfan	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
beta-Endosulfan	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.843	ac	1.28	ac	0.639	ac
Total Endosulfans ¹	0.916		0.898		0.91		0.926		0.898		0.85		1.3		1.73		1.09	
Endrin	2.163		1.963	NS	1.069	NS	5.331	aNS	2.816	aNS	0.708	NS	0.958	NS	3.602	NS	5.722	NS
Heptachlor	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
Heptachlor epoxide	0.915	a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.85	ac	0.909	ac	0.892	ac	0.897	ac
Hexachlorobenzene	0.915	a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.85	ac	0.909	ac	0.892	ac	0.897	ac
Lindane	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
Methoxychlor	4.576	a	4.494	ac	4.552	ac	4.628	ac	4.494	ac	4.252	ac	4.544	ac	4.46	ac	4.488	ac
Toxaphene	22.96	a	22.54	ac	22.84		23.22	ac	22.54	ac	21.36	ac	22.8	ac	22.4	ac	22.52	ac
Polychlorinated Biphenyl Congeners (ug/kg)																		
PCB 8	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	1.26	ac	0.9	ac
PCB 18	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 28	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 44	0.92	a	0.9	ac	1.26	ac	2.16	c	2.41	ac	2.67	c	2.39	c	2.19	bc	2.02	abc
PCB 52	0.92	a	0.9	ac	0.98	abc	0.93	ac	0.91	abc	1.23	bc	2.69	c	2.95	c	2.61	c
PCB 66	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	abc	0.91	abc	1.44	bc	1.27	bc	0.94	abc
PCB 101	0.92	a	0.9	ac	1.84	abc	1.94	bc	2.68	c	2.75	c	3.22	c	2.3	bc	2.04	ac
PCB 105	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	1.22	abc	0.89	ac	0.9	ac
PCB 118	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.95	abc	0.85	ac	1.26	bc	0.97	abc	0.9	ac
PCB 128	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 138	0.92	a	0.9	ac	0.91	ac	0.93	ac	1.03	abc	1.05	abc	1.76	bc	1.24	bc	1.17	abc
PCB 153	0.92	a	0.9	ac	0.91	ac	0.93	ac	1.04	abc	1.05	abc	1.42	bc	1.21	abc	1.06	abc
PCB 170	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 180	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 187	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 195	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 206	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
PCB 209	0.92	a	0.9	ac	0.91	ac	0.93	ac	0.9	ac	0.85	ac	0.91	ac	0.89	ac	0.9	ac
Total PCBs ¹	33.1		32.4		35.5		38		39.6		39.7		49		44.6		41.3	

Results presented are the mean of five replicate samples.

1 - Totals calculated for informational purposes only. Statistical analysis not conducted on total values and qualifiers not applied.

Statistical qualifiers -

- a - Analyte not detected (below MDL) in at least one replicate; mean value was calculated using the project specific MDL for non-detected values.
- b - Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.
- c - Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS - Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at α=0.05.
S - Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at α=0.05
NS/S indicates that a statistical outlier was detected and the findings of significance were different with and without the statistical outlier included in the analysis.

Table 28 Mean wet weight chemical concentrations and statistical findings for *N. virens* tissue

Analyte	CLDS Ref Site		Composite 1		Composite 2		Composite 3		Composite 4		Composite 5		Composite 6		Composite 7		Composite 8	
Total Metals (mg/kg)																		
Arsenic, total	2.06		2.17	NS	2.3	NS	2.14	NS	2.07	NS	2.23	NS	2.04	NS	2.14	NS	2.32	NS
Cadmium, total	0.034	b	0.039	bNS	0.044	bNS	0.035	bNS	0.04	bNS	0.038	bNS	0.036	bNS	0.038	bNS	0.041	bNS
Chromium, total	0.057	b	0.055	bNS	0.046	abNS	0.047	abNS	0.047	abNS	0.041	abNS	0.08	bNS	0.042	abNS	0.039	abNS
Copper, total	1.02		0.85	NS	1.09	NS	0.96	NS	1.24	S	0.89	NS	1.05	NS	0.94	NS	0.82	NS
Lead, total	0.127		0.098	NS	0.138	NS	0.102	NS	0.124	NS	0.138	NS	0.095	NS	0.116	NS	0.141	NS
Mercury, total	0.01	b	0.011	bNS	0.008	bNS	0.011	bNS	0.012	bNS	0.007	bNS	0.011	bNS	0.012	bNS	0.007	bNS
Nickel, total	0.111	b	0.085	bNS	0.081	bNS	0.093	bNS	0.081	bNS	0.072	bNS	0.115	bNS	0.105	bNS	0.106	bNS
Zinc, total	6.06		6.43	NS	6.68	S	6.64	S	6.72	S	6.25	NS	6.76	S	9.05	S	6.53	NS
Polycyclic Aromatic Hydrocarbons (ug/kg)																		
Naphthalene	4.73	ab	5.06	abNS	9.16	aS	9.39	aS	9.08	aS	9.29	aS	9.47	aS	9.2	aS	8.93	aS
Acenaphthylene	11.94	a	4.84	abNS	9.16	aNS/S	9.39	aNS/S	9.08	aNS/S	9.29	aNS/S	9.47	aNS/S	9.2	aNS/S	8.93	aNS/S a
Acenaphthene	7.26	ab	7.89	abNS	9.16	aNS/S	9.39	aNS/S	9.08	aNS/S	9.29	aNS/S	9.96	abNS/S	11.06	abNS/S	13.32	bS
Fluorene	4.58	a	7.06	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Phenanthrene	5.89	ab	10.5	abNS	9.16	aS	9.39	aS	9.08	aS	9.29	aS	9.47	aS	9.2	aS	8.93	aS
Anthracene	4.58	a	4.77	abc	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Fluoranthene	4.58	a	4.89	abc	9.49	abc	9.39	ac	13	abc	10.74	abc	16.96	bc	21.68	bc	33.5	c
Pyrene	4.58	a	4.73	ac	9.28	abc	9.39	ac	14.18	abc	10.23	abc	13.09	abc	15.62	bc	24.22	bc
Benzo(a)anthracene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Chrysene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Benzo(b)fluoranthene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Benzo(k)fluoranthene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Benzo(a)pyrene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Indeno(1,2,3-c,d)pyrene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Dibenz(a,h)anthracene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Benzo(g,h,i)perylene	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.2	ac	8.93	ac
Total LMW PAHs ¹	39.0		40.1		55.0		56.3		54.5		55.7		57.3		57.1		58.0	
Total HMW PAHs ¹	45.8		47.5		92.1		93.9		99.8		95.3		105.8		110.9		129.2	
Total PAHs ¹	84.8		87.6		147		150.2		154.3		151		163.1		168		187.1	
Organochlorine Pesticides (ug/kg)																		
Aldrin	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
cis-Chlordane	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
trans-Chlordane	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
cis-Nonachlor	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
trans-Nonachlor	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Oxychlordane	0.917	a	0.947	ac	0.916	ac	0.939	ac	0.908	ac	0.929	ac	0.947	ac	0.92	ac	0.893	ac
Total Chlordanes ¹	2.75		2.84		2.75		2.82		2.72		2.79		2.84		2.76		2.68	
4,4'-DDT	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
4,4'-DDD	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
4,4'-DDE	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Total DDT ¹	1.37		1.42		1.37		1.41		1.36		1.39		1.42		1.38		1.34	
Dieldrin	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
alpha-Endosulfan	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
beta-Endosulfan	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Total Endosulfans ¹	0.916		0.946		0.916		0.938		0.908		0.928		0.948		0.92		0.894	
Endrin	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Heptachlor	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Heptachlor epoxide	0.917	a	0.947	ac	0.916	ac	0.939	ac	0.908	ac	0.929	ac	0.947	ac	0.92	ac	0.893	ac
Hexachlorobenzene	0.917	a	0.947	ac	0.916	ac	0.939	ac	0.908	ac	0.929	ac	0.947	ac	0.92	ac	0.893	ac
Lindane	0.458	a	0.473	ac	0.458	ac	0.469	ac	0.454	ac	0.464	ac	0.474	ac	0.46	ac	0.447	ac
Methoxychlor	4.584	a	4.73	ac	4.58	ac	4.692	ac	4.538	ac	4.644	ac	4.738	ac	4.604	ac	4.468	ac
Toxaphene	23.02	a	23.74	ac	23	ac	23.54	ac	22.78	ac	23.3	ac	23.78	ac	23.12	ac	22.42	ac
Polychlorinated Biphenyl Congeners (ug/kg)																		
PCB 8	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 18	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 28	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 44	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 52	0.46	a	0.47	ac	0.92	abc	0.94	ac	0.91	ac	0.93	ac	2.05	bc	2.18	ac	1.58	ac
PCB 66	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 101	0.46	a	0.54	abc	0.95	abc	0.94	abc	0.91	ac	0.93	ac	1.31	abc	0.92	ac	0.89	ac
PCB 105	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 118	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 128	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 138	0.61	ab	0.76	bNS	0.92	aS	0.95	abS	0.99	abS	0.93	abS	1.38	abS	1.43	bS	1.36	abS
PCB 153	0.87	b	1.16	bNS	0.97	abNS	1.09	abNS	1.18	abNS	1.18	abNS	2.07	bS	2.19	S	1.73	bS
PCB 170	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 180	0.46	a	0.56	abc	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 187	0.46	a	0.53	abc	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 195	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 206	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
PCB 209	0.46	a	0.47	ac	0.92	ac	0.94	ac	0.91	ac	0.93	ac	0.95	ac	0.92	ac	0.89	ac
Total PCBs ¹	17.7		19.3		33.3		34.2		33.5		34		40.2		39.2		36	

Results presented are the mean of five replicate samples.

1 - Totals calculated for informational purposes only. Statistical analysis not conducted on total values and qualifiers not applied.

Statistical qualifiers -

- a - Analyte not detected (below MDL) in at least one replicate; mean value was calculated using the project specific MDL for non-detected values.
- b - Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.
- c - Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS - Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at α=0.05.
S - Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at α=0.05
NS/S indicates that a statistical outlier was detected and the findings of significance were different with and without the statistical outlier included in the analysis.

4. Chemical analyses QA/QC

This section provides quality control information and documents the overall quality of the analytical data upon which the project conclusions are drawn. Project QA/QC information (e.g., laboratory control survival, reference toxicant results) for the biological testing program are discussed in Sections 2 and 3.

The chemical data collected during the investigation were of sufficient quality and sensitivity to meet the project objectives. The majority of the QC results associated with the analytical parameters met the measurement objectives presented in Section 5 and 10 of the work plan (AECOM, 2017a). Specific nonconformances with those measurement objectives are presented in the laboratory report narrative, RIM Checklist and validation memo associated with each laboratory report. A full set of QC sample findings (method blanks, duplicate precision results, laboratory control sample results, and matrix spike results) is provided in Appendix D, Chemistry Laboratory Data.

4.1 Analytical sensitivity

The sensitivity of program chemical measurements can sometimes dictate the ultimate usefulness of the final data. Results that are insufficiently sensitive to detect changes can limit the final project conclusions. The New Haven project required RLs were specified in the agency approved work plan (AECOM, 2017a) to detect sedimentary contaminant considerations, ambient seawater and elutriate concentrations, and bioaccumulative tissue concerns.

The work plan prepared by AECOM (AECOM, 2017a) summarized the laboratory RLs and project required RLs. Nondetect chemistry results were reported at laboratory RLs since they provide greater confidence. The majority of the RLs for all sample matrices met the QAPP specifications. Some deviations from work plan-specified (AECOM, 2017a) limits occurred in the sediment matrix but these deviations were very minor. The RL for sedimentary PAH compounds was typically 0.03 milligrams per kilogram (mg/kg) versus the specified 0.01 mg/kg; the RL for pesticides and PCB congeners was typically 0.002 versus 0.001 mg/kg. Overall, these small deviations in the sediment sample set are not considered to affect the project data quality.

4.2 Contamination concerns

Sample contamination can sometimes affect sample results, particularly when measuring chemical parameters at very low concentrations. In this study, potential contamination has been monitored using equipment blank QC samples. In this study, a few target analytes were detected in the equipment blanks associated with the coring equipment and the grab sampler, but at very low levels and are not considered to have an impact on sample results.

4.3 Data precision

Analytical precision was measured at the laboratory level using laboratory control sample (LCS) duplicates or matrix spike duplicates.

Sediment measurement precision

Sediment analysis precision was evaluated using matrix spike duplicates and LCS duplicates. Precision relative percent difference (RPD) objectives for this project ranged from 20 for metal parameters to 30 for trace organic parameters. RPD criteria were not met for individual organic parameters and metals in matrix spike duplicates but this may be attributed to sample homogeneity.

Elutriate and ambient seawater measurement precision

Elutriate and ambient seawater analysis precision was evaluated using matrix duplicates, matrix spike duplicates, and Laboratory Control Sample (LCS) duplicates. RPD objectives for this project were equivalent to the sediment objectives (20 percent for metals, 30 percent for trace organic compounds). The RPD criteria were met for all elutriate parameters with the exception of Aldrin in the Composite 7 elutriate where the RPD was reported as 34%; this deviation should not impact data usability.

Tissue measurement precision

Tissue analysis precision was evaluated using matrix spike and LCS duplicates. The tissue RPD objectives for this project were also 20 percent for metals and 30 percent for trace organic compounds. The RPD criteria were not met for all target analytes but this may be the result of sample homogeneity. These variances are not considered to adversely affect the tissue dataset.

4.4 Data accuracy

Accuracy was evaluated using several QC sample types by calculating the percent recovered for each parameter of interest. A recovery value of 100% corresponds to 100% accuracy in this analysis. LCS and matrix spiked samples were incorporated as accuracy QC samples. Additionally, surrogate spikes were used to evaluate the accuracy of organic measurements and certified reference materials (CRMs) were included where available.

4.4.1 Sediment analysis accuracy

Percent recovery objectives for sediment measurements were met with few exceptions. Results for individual target analytes exceeded control limits in some matrix spikes; this is generally indicative of a sample specific matrix interference. Also, Trans Nonachlor measured in a sediment CRM was outside of the certified range. None of the exceedances are considered to negatively impact data usability.

4.4.2 Elutriate and ambient seawater analysis accuracy

The hexavalent chromium method blank result associated with analytical batch 444W was flagged as high in the QC summary report. However, it appears the result for this blank was a value between the MDL and RL and should not have a significant impact on the usability of data for associated samples. Percent recovery objectives for the aqueous project samples were all within laboratory specified accuracy limits.

4.4.3 Tissue analysis accuracy

LCSS, matrix spikes, and SRMs were used to assess the accuracy of the tissue chemical measurements. The SRMs represent an excellent measure of overall analytical accuracy. For pesticides, cis-Chlordane was measured slightly below the certified range in one SRM analysis. For the PCB Congener analysis elevated recoveries were reported for C13-BZ#28.

Matrix spike recovery measurements were largely within work plan specified limits. Selected compounds were biased low and within 30 percent of the target QC accuracy range. A detailed discussion of these results can be found in the individual data validation memos.

5. References

AECOM, 2017a. Sampling and Analysis Plan. Laboratory Testing in Support of Environmental Assessment. Sampling and Environmental Testing. New Haven Harbor Federal Navigation Project, New Haven, Connecticut. August 2017.

AECOM. 2017b. Field Report for Dredged Material Suitability Testing and Evaluation in the New Haven Harbor FNP. September 2017.

Chang-Hoon Lee, Chan-Gyoung Sung, Seong-Dae Moon and Jong-Hyeon Lee. 2013. Effects of Ammonia on Fertilization, Development, and Larval Survival in the Northern Pacific Asteroid, *Asterias amurensis* (Sea urchin). Bulletin of Environmental Contamination and Toxicology. 91:102-106.

EPA. 1989. Ambient Water Quality Criteria for Ammonia (Saltwater) – 1989. EPA 440/5-88-004. April 1989.

EPA 2002. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012.

Maguire Group, Inc. 2003. Laboratory Testing in Support of Site Specific Water Quality Criteria Assessment and Hydrographic Data Collection for New Bedford Harbor. Toxicity Identification Evaluation Testing with Mysids and Sea Urchins.

Appendix A Work Plan

USACE CONTRACT NO. W912WJ-17-D-0003
Delivery Order No.:W912WJ17F0036

Laboratory Testing in Support of Environmental Assessment

Sampling and Environmental Testing
New Haven Harbor Federal Navigation Project
New Haven, Connecticut

Prepared for



U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

Prepared by
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New Haven Harbor FNP
New Haven, Connecticut

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Laboratory Testing in Support of Environmental Assessment

Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut

COMMITMENT TO IMPLEMENT THE ABOVE SAMPLING AND ANALYSIS PLAN

Ryan McCarthy,
AECOM Task Order Manager

Date

Debra Simmons,
AECOM QA Officer

Date

Ken Simon,
Bioassay Laboratory Manager

Date

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Date

Ken Cadmus
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Date

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New Haven, Connecticut



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Attachments

Accident Prevention Plan (provided separately)
 Coring Log
 Daily Activity Logs
 COC Form
 Sample receipt condition verification forms

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NHH-G-04	Custody
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NHH-S-02	Vibracoring
NHH-S-03	Sediment Core Processing
NHH-W-01	Water Quality Data and Water Collection
RIM QC Summary Tables	

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Acronyms

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
ASTM	American Society for Testing and Materials
AWQC	Ambient Water Quality Criteria
BrCl	Bromium Monochloride
NAE	U.S. Army Corps of Engineers, New England District
CFR	Code of Federal Regulations
CLDS	Central Long Island Sound Disposal Site
COC	Chain of Custody
CWA	Clean Water Act
CVAA	Cold Vapor Atomic Absorption
CVAF	Cold Vapor Atomic Fluorescence
DGPS	Differential Global Positioning System
DIW	Deionized Water
DM	Dredged Material
DQO	Data quality objective
EDD	Electronic Data Deliverable
EM	Engineer Manual
EPA	Environmental Protection Agency
FDA	U.S. Food and Drug Administration
FNP	Federal Navigation Project
GC/ECD	Gas chromatography/electron capture detector
GC/MS	Gas chromatography/mass spectrometry
GPS	Global Positioning System
HASP	Health and Safety Plan
HCl	Hydrochloric Acid
HDPE	High density polyethylene
ICP	Inductively Coupled Plasma
ICP/MS	Inductively Coupled Plasma Mass Spectrometry
ICP/OES	Inductively Coupled Plasma/Optical Emission Spectrometry
ID	Identification
IDW	Investigation-Derived Waste
LIMS	Laboratory information management system
LPC	Limited Permissible Concentration
LQAP	Laboratory Quality Assurance Plan
MDL	Method detection limit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MLLW	Mean Lower Low Water
mL	milliliters
mm	millimeter
MPRSA	Marine Protection, Research, and Sanctuaries Act
MQO	Measurement quality objectives
NHH	New Haven Harbor

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NMFS	National Marine Fisheries Service (NOAA)
ng/g	nanograms per gram
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
RIM	Regional Implementation Manual
RL	Reporting Limit
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SOW	Statement or Scope of Work
SPP	Suspended Particulate Phase
SSO	Site Safety Officer
TAT	Turnaround Time
TM	Technical Manager
USACE	U.S. Army Corps of Engineers
µm	micrometer
µg/g	micrograms per gram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

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This Sampling and Analysis Plan (SAP) has been prepared by AECOM for the United States Army Corps of Engineers, New England District (NAE) to support NAE's harbor maintenance program at New Haven Harbor, New Haven, Connecticut. This SAP has been prepared in accordance with Engineering Manual 200-1-3 *Requirements for the Preparation of Sampling and Analysis Plans*.

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Field Sampling Plan

**Sampling and Environmental Testing – New Haven Harbor
Federal Navigation Project, New Haven, Connecticut**

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A.0 Field Sampling Plan (FSP)

A.1 Project Background

In its mission to provide safe and reliable navigation channels, the U.S. Corps of Engineers (USACE), monitors the water depths in Federal Navigation Projects (FNPs) for safety. The New England District of the Corps of Engineers (NAE) is preparing a feasibility study for improvements to the New Haven Harbor FNP. NAE has developed this Task Order to collect the environmental data necessary to support the impact assessment for dredging and placement of the material at the Central Long Island Sound Disposal Site (CLDS).

The proposal for the improved FNP consists of:

- Deepening the main channel from a 35 foot main channel to 42 feet at mean lower low water (MLLW);
- Widening the main channel from 400 feet to 500 feet in shore of the breakwater and widening to 600 feet outside the breakwater;
- Widening the channel bend at Southwest Ledge from 560 feet to a minimum of 780 feet;
- Straightening the channel bend downstream of the existing turning basin; and,
- Deepening the turning basin from 35 feet to 42 feet MLLW.

NAE is currently proposing to mechanically dredge approximately 4,500,000 cubic yards of sediment and 55,100 cubic yards of rock from the area. To the extent practical, these materials will be reused beneficially to beach nourishment, marsh creation, upland construction projects, and to cover historic dredge material mounds in Long Island Sound. The remainder will be placed, if suitable, at the CLDS.

A.2 Project Organization and Responsibilities

Highly qualified individuals have been selected for each of the tasks to ensure that the project objectives are accomplished accurately and efficiently. The project organization and work breakdown is depicted in **Figure A-1**. Individual responsibilities are detailed below.

NAE Technical Manager (TM)

The NAE Technical Manager, Mr. Ben Loyd, will be consulted during the project planning and performance phases. As the primary point of contact for the Corps and this scope of work, Mr Loyd will be in weekly contact with the AECOM project team during sample preparation, and physical and chemical analysis, and in the event any problems are encountered.

AECOM Program Manager (PM)

Mr. Don Dwight, serving as AECOM's Program Manager (PM), will provide overall leadership in the performance of this task order with regular NAE and AECOM team communications. Mr. Dwight will verify that the right people are committed to contract tasks, that safety and quality systems are in place, regular reviews are undertaken, issues resolved without delay and contractual specifications met or exceeded.

AECOM Deputy Program Manager (DPM)

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Ms. Maura Surprenant, serving as AECOM's Program Manager (DPM), will provide daily leadership in the performance of this task order with regular NAE and AECOM team communications. Ms. Surprenant will assist Mr. Dwight with daily duties including ensuring that the right people are committed to contract tasks, that safety and quality systems are in place, regular reviews are undertaken, issues resolved without delay and contractual specifications met or exceeded.

AECOM Task Order Manager

Mr. Ryan McCarthy will serve as the AECOM Task Order Manager, with the responsibility for technical, financial, and scheduling matters related to this task. Mr. McCarthy, as the point of contact between task leads, safety and quality managers, and program management, will communicate regularly with the project team to discuss action items, schedule, financial, and technical considerations on a regular basis during the implementation of this SAP and will procure the subcontractor team.

Mr. McCarthy will also oversee the preparation of the task reports to ensure they meet or exceed NAE specifications, particularly as required by NAE's Regional Implementation Manual (RIM; EPA/USACE, 2004). Raw and statistical data will be provided to fully support agency dredged material (DM) suitability decision-making. All reports will be available electronically and all sediment data will be provided in electronic data deliverable (EDD) format meeting RIM requirements. Quality control (QC) summary tables will be included with each data submission.

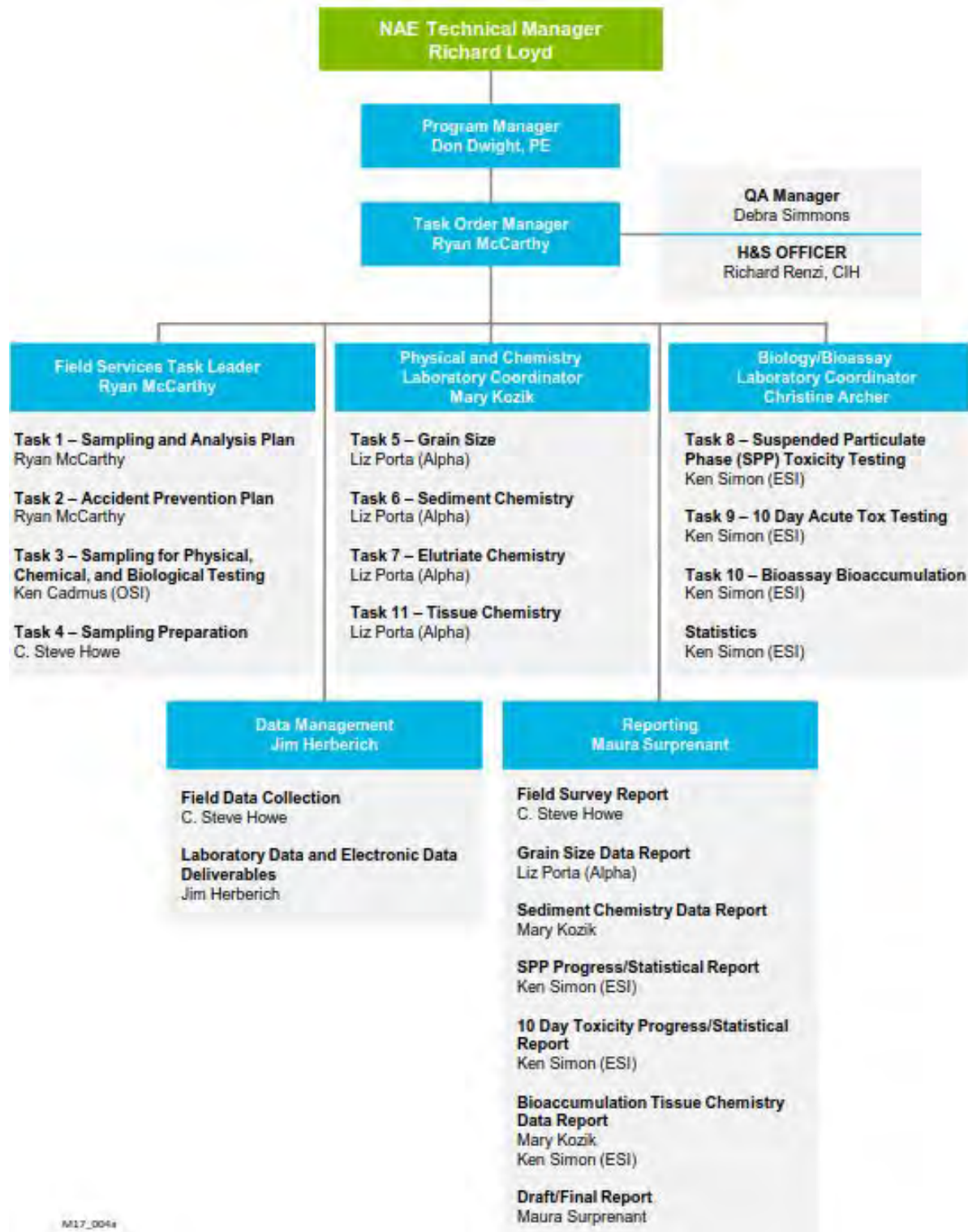
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Figure A-1 Task Order Organization and Work Breakdown



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AECOM Health & Safety Officer (SO)

Mr. Richard Renzi, CIH is AECOM's Safety Officer dedicated to this investigation with direct communication to the AECOM Task Order Manager. He will prepare/ review all modifications to the project Accident Prevention Plan (APP), and any applicable Activity Hazard Analyses (AHA). Specific duties include:

- On behalf of AECOM, reviewing and approving the APP and amendments and ensuring that EM-385-1-1 requirements are fully met before delivery to the NAE TM for approval;
- Advising the AECOM Task Order Manager on matters relating to health and safety at the site;
- Conducting accident investigations;
- Maintaining regular contact with the project team to evaluate site conditions and new information that might require modifications to the APP; and
- Overseeing the Site Safety Officer (SSO).

Project Quality Assurance (QA) Officer

Ms. Debra Simmons will serve as the Project QA Officer and has overall responsibility for quality assurance oversight. Ms. Simmons has led quality assurance programs for more than 30 years and in this role will communicate directly to the AECOM Task Order Manager. Specific responsibilities include:

- Implementation of this SAP upon approval;
- Reviewing and approving QA procedures on behalf of AECOM, including any modifications to existing approved procedures;
- Ensuring that QA audits of the various phases of the project are conducted as required; and
- Providing QA technical assistance to project staff.

Field Services Task Leader & Chief Scientist

Mr. C. Steve Howe, serving as the Field Services Task Leader and Chief Scientist will provide leadership in every aspect of the field program, and implement the sediment and water collection program. Mr. Howe will oversee the field services subcontractor (OSI) and all field sample collection activities.

The Field Services Task Leader has overall responsibility for completion of all field activities in accordance with the FSP and Quality Assurance Project Plan (QAPP) and is the communication link between the Task Order Manager and the field team. This individual also acts as the Site Safety Officer (SSO) and will engage the field personnel in daily safety discussions, field safety related documentation (float plans, etc.) and will be the primary point of contact for all field related safety communications. Specific responsibilities of the Field Services Task Leader and Chief Scientist include:

- Coordinating activities in the field, and assigning specific duties to field team members;
- Collecting samples, conducting field measurements, and decontaminating equipment according to documented procedures stated in the FSP and QAPP;
- Mobilizing and demobilizing of the field team and subcontractors;
- Directing the activities of subcontractors in the field;

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- Resolving any logistical problems that could potentially hinder field activities, such as equipment malfunctions or availability, personnel conflicts, or weather dependent working conditions;
- Implementing field QC including issuance and tracking of measurement and test equipment; the proper labeling, handling, storage, shipping, and chain of custody (COC) procedures used at the time of sampling; and control and collection of all field documentation;
- Ensuring that field documentation and data are complete and accurate
- Communicating any nonconformance or potential data quality issues to the Task Order Manager.
- Serving as SSO; and
- Preparing the Field Report.

Physical & Chemistry Laboratory Coordinator

Ms. Mary O'Connell-Kozik, as the Physical & Chemistry Laboratory Coordinator, will manage the subcontractor chemistry/physical testing laboratories. Ms. O'Connell-Kozik, a Senior Chemist, will serve as the liaison between field and laboratory personnel; supervise data review activities, and author related progress reports.

Biology/Bioassay Laboratory Coordinator

Ms. Christine Archer, an Eco toxicologist and former bioassay laboratory biologist, will serve as the Biology/Bioassay Laboratory Coordinator. Ms. Archer will coordinate with the biology laboratory to implement sample composite formation, preparation of elutriate samples, and performance and reporting of the 10-day, suspended particulate phase (SPP), and 28-day bioassay results along with all relevant statistics.

Data Manager

Mr. Jim Herberich ensure every aspect of data recording and electronic measurement records are complete and accurate, and that sediment chemistry EDDs are transferred to NAE as defined in the RIM (EPA/USACE, 2004).

Ocean Surveys, Inc. Project Manager

AECOM has selected Ocean Surveys, Inc. (OSI) located in Old Saybrook, CT to provide field services and equipment for the project. OSI will be responsible for providing and maintaining the sampling vessel, vessel and equipment handling staff, appropriate field equipment for positioning the vessel and coring to the project/sample depth.

Mr. Ken Cadmus, the project field survey leader (or designee), will captain the survey vessel and oversee navigational and shipboard operations. Mr. Cadmus (or designee) will implement the field survey requirements specified in this SAP when approved.

Alpha Analytical Laboratory Project Manager

Ms. Elizabeth Porta, Alpha Analytical Laboratory Project Manager will oversee the implementation of this SAP and the specifications detailed in Section B (QAPP). Alpha Analytical will be responsible for the grain size and chemical analyses of the sediments collected as part of this program. Ms. Porta will communicate with the AECOM Task Order Manager to confirm the condition of samples arriving at the laboratory, verify the COC specified sample list and testing requirements, bring any project concerns to the AECOM Physical Laboratory Coordinator without delay, and transmit EDDs and corresponding laboratory reports to the project data manager in the formats specified.

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ESI Laboratory Manager

Mr. Ken Simon, ESI Laboratory Manager will oversee the implementation of this SAP and the specifications detailed in Section B (QAPP). ESI will be responsible for all biological and chemical laboratory activities, including elutriate/ SPP sample preparation, toxicological testing and reporting. He will communicate with the appropriate AECOM Laboratory Coordinator (Biology, Chemistry) to confirm the condition of samples arriving at the laboratory, verify the COC specified sample list and testing requirements, oversee the preparation of sample composites, standard chemical elutriate and SPP preparations, and all project bioassays. Mr. Simon will bring any project concerns to the appropriate AECOM Laboratory Coordinator without delay (Biology, Chemistry), and transmit chemistry EDDs and related laboratory reports, and bioassay results with corresponding statistics and reports to the AECOM Laboratory Coordinators according to the established project schedule.

Contact	Phone	Responsibility
Ben Loyd	978.318.8048	NAE Technical Manager
Don Dwight	978.905.2970	AECOM Program Manager
Maura Surprenant	508.833.6960	AECOM Deputy Program Manager
Ryan McCarthy	603.263.2157	AECOM Task Order Manager
Rich Renzi	978.905.3137	AECOM Health & Safety Officer
Debra Simmons	978.589.3358	AECOM QA Officer
C. Steve Howe	603.520.0169	Field Services Task Leader and Chief Scientist
Mary O'Connell-Kozik	978.905.2277	Physical & Chemical Laboratory Coordinator
Christine Archer	603.622.1556	Biology/Bioassay Laboratory Coordinator
Jim Herberich	978.905.2243	Data Manager
Ken Cadmus	860.388.4631	OSI Project Manager
Liz Porta	508.822.9300	Alpha Analytical Laboratory Project Manager
Ken Simon	603.475.7654	ESI Laboratory Manager

A.3 Project Scope and Objectives

The objective of this work is to acquire data for the characterization of sediments proposed to be dredged for New Haven Harbor FNP improvement.

A.3.1 Task Description

This New Haven Harbor FNP Environmental Assessment Project will require the collection of discrete sediment samples from 26 stations throughout the FNP to represent the material to be dredged. Samples (cores) collected from discrete locations within the FNP footprint will be pooled into groups of stations with similar grain size characteristics for full-scale testing. Seawater will also be needed to evaluate potential water column impacts (i.e., the formation of chemical elutriate and suspended particulate phase samples).

The proposed work consists of taking sediment cores to project depth plus 2 feet of over depth (see **Table A-1**) from 26 locations along a stretch within the FNP to be analyzed for parameters as defined in Tasks 5 through 11. Samples from locations where similar material is found may be composited; it is anticipated that the sediment samples will be composited into eight groups for analysis. Reference site sediments should be

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collected from the CLDS Reference Site located at latitude 41.134850 and longitude 72.835690. The testing results will be used to characterize the sediment in order to determine the suitable alternatives available for disposal.

Surface water samples will be collected from areas representing the sediment core composite samples and from CLDS for use in preparation of elutriate samples and biological analyses.

General guidance for this work is found in the EPA/ USACE regional protocol “Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters” (April 6, 2004). Sampling, testing, and QA/QC procedures as required and detailed in the RIM are referenced in each task of this scope of work (SOW).

To accomplish the full range of project requirements, NAE has established the following 12 tasks:

Task	Description
1	Sampling and Analysis Plan
2	Accident Prevention Plan
3	Sampling for Physical Analysis, Sediment Chemistry, Elutriate, and Biological Testing
4	Sample Preparation for Physical Analysis, Sediment Chemistry, Elutriate and Biological Testing
5	Sediment Grain Size Analysis
6	Sediment Chemistry
7	Standard Elutriate Testing
8	Suspended Phase Acute Toxicity Testing
9	10-day Whole Sediment Acute Toxicity Testing
10	28-Day Bioassay/Bioaccumulation
11	Tissue Analysis
12	Reporting

A.3.2 Health and Safety

A program specific APP will be developed and submitted to NAE prior to the commencement of any field efforts. The APP will be prepared in accordance with EM-385-1-1. The APP will address any unusual or unique aspects of the proposed scope of work to be executed (e.g., working on water, vibracore operations, etc.). A draft version of the APP will be submitted electronically to the Safety and Occupational Health Office and to the NAE Technical Manager. The final version will be submitted electronically along with one hard copy.

Additionally, the APP will address any AECOM-specific policies and procedures that need to be followed over the course of the field program, and should be considered a “living document” as they can be updated based on changing site conditions. Additionally, task-specific AHA documents will be prepared for use in the field for each major phase of work to be completed. A major phase of work is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform the work. The analysis shall define all activities to be performed,

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identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Prior to the commencement of any field work, the training records for all staff (AECOM and subcontractors) proposed to be utilized on this program will be reviewed to ensure that they are current.

The SSO for this project is Mr. C. Steve Howe. Mr. Howe will be responsible for general day-to-day field health and safety of AECOM and its subcontractors, ensuring that all field staff participates in daily tailgate/dockside safety meetings, ensuring correct application/ usage of personal protective equipment (PPE) by field staff, and monitoring field activities for adherence to the APP. Mr. Howe will also responsible for hosting a project Healthy and Safety kickoff meeting for all staff prior to mobilization. In the event of an incident, Mr. Howe is responsible for initial response protocols, incident management, and proper reporting. Mr. Howe and all field staff have “Stop Work Authority” in the event an employee identifies a condition or act that is likely to cause an Imminent Danger situation.

All safety meetings/ briefings will be documented and submitted to the NAE as part of standard reporting procedures. The USACE Contractor Monthly Summary Record of Injuries/ Illness and Work Hour Exposure form will be completed each month and submitted electronically to the NAE Technical Manager no later than close of business on the 10th calendar day of the following month.

A.3.3 Project Mobilization

Upon NAE's approval of this SAP along with the project APP, the project team will mobilize a field survey to core sediments within the harbor area, collect surface sediment at the CLDS Reference Site, and collect seawater from the harbor and reference site.

Early in the program, NAE will evaluate the sediment texture (rapid 24 hour grain size analysis), chemical composition (bulk sediment chemistry) and determine a discrete sample compositing scheme. Following collection and compositing of bulk sediment samples, elutriate, toxicity, and biological testing will commence.

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Table A-1 New Haven Harbor Sampling Positions (NAD 1983), Project Depth, Estimated Penetrations, Quantities, and Anticipated Composite Scheme

Sample ID	Latitude (NAD 83)	Longitude (NAD 83)	Predicted Water Depth (FT MLLW)	Project Depth (FT MLLW) Including Allowable Over Depth	Est Penetration From Water/ Sediment Interface	Estimated Volume (Gallons) Per Location *	Estimated Number of Cores/Grabs Needed
NHH-A#	41.222715	-72.910995	28.6	36.6	10.0	4.2	3
NHH-B	41.223094	-72.909953	39.5	42.0	4.5	1.9	4
NHH-C	41.223443	-72.909040	33.5	42.0	10.5	4.4	2
NHH-D	41.248083	-72.915987	18.6	33.6	17.0	7.1	1
NHH-E	41.247915	-72.915987	36	42.0	8.0	3.3	2
NHH-F#	41.247866	-72.913942	17.8	26.2	10.4	4.3	3
NHH-G#	41.262183	-72.913826	15.4	27.7	14.3	5.9	2
NHH-H	41.262103	-72.913150	39.9	42.0	7.1	3.0	3
NHH-I	41.262042	-72.911773	22.8	31.0	10.2	4.2	2
NHH-J#	41.278348	-72.913132	25.1	24.5	1.4	0.6	15
NHH-K	41.278367	-72.912477	36.8	42.0	7.2	3.0	3
NHH-L	41.278436	-72.911054	23.8	26.6	4.8	2.0	4
NHH-M#	41.286420	-72.912045	24.7	35.0	12.3	5.1	3
NHH-N	41.286272	-72.910575	37.4	42.0	6.6	2.7	3
NHH-O	41.286130	-72.909167	36.6	26.4	8.2	3.4	2
NHH-P#	41.292373	-72.913125	19.2	42.0	24.8	10.3	2
NHH-Q	41.292245	-72.911934	14.8	42.0	29.2	12.1	1
NHH-R	41.292011	-72.909869	36.5	26.0	8.5	3.5	2
NHH-S#	41.281829	-72.908069	38.3	42.0	5.7	2.4	4
NHH-T#	41.294296	-72.912018	8.0	23.0	17.0	7.1	2
NHH-U	41.294206	-72.911217	15.7	42.0	28.3	11.8	1
NHH-V	41.294024	-72.909459	36.7	42.0	7.3	3.0	2

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Sample ID	Latitude (NAD 83)	Longitude (NAD 83)	Predicted Water Depth (FT MLLW)	Project Depth (FT MLLW) Including Allowable Over Depth	Est Penetration From Water/ Sediment Interface	Estimated Volume (Gallons) Per Location *	Estimated Number of Cores/Grabs Needed
NHH-W#	41.293841	-72.907753	36.8	42.0	7.2	3.0	3
NHH-X	41.297451	-72.907596	17.8	25.0	9.2	3.8	2
NHH-Y	41.296875	-72.906705	37.3	42.0	6.7	2.8	3
NHH-Z#	41.296409	-72.906006	36.7	42.0	7.3	3.0	4
NHH-CLDS***	41.149165	-72.8825	80	NA	NA	20.9	4

*Volume estimated assuming 3½ -inch diameter core liners for samples and 0.1 m² grab for reference location

** Assumes 25 gallons of sediment per composite for testing and archiving

*** CLDS Reference Site.

- Archeological core to be collected at this location

MLLW – Mean Lower Low Water

Sample volumes may be adjusted upon finalization of compositing scheme in consultation with NAE.

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Table A-2 Example Composite IDs and Water Sample IDs/ Volumes Used to Prepare the Elutriate and SPP Mixtures

Sample ID*	Water Sample ID* Used for Elutriate/SPP Mixture	Expected Composite ID	Minimum Water Sample Volume Required (gal)
NHH-A	NHC-A	NHC-1	25
NHH-B	NHC-B		
NHH-C	NHC-C		
NHH-D	NHC-D	NHC-2	25
NHH-E	NHC-E		
NHH-F	NHC-F		
NHH-G	NHC-G	NHC-3	25
NHH-H	NHC-H		
NHH-I	NHC-I		
NHH-J	NHC-J	NHC-4	25
NHH-K	NHC-K		
NHH-L	NHC-L		
NHH-M	NHC-M	NHC-5	25
NHH-N	NHC-N		
NHH-O	NHC-O		
NHH-P	NHC-P	NHC-6	25
NHH-Q	NHC-Q		
NHH-R	NHC-R		
NHH-S	NHC-S		
NHH-T	NHC-T	NHC-7	25
NHH-U	NHC-U		
NHH-V	NHC-V		
NHH-W	NHC-W		
NHH-X	NHC-X	NHC-8	25
NHH-Y	NHC-Y		
NHH-Z	NHC-Z		
NHH-CLDS**	NA	NA	22.5

* Actual compositing scheme to be determined based on the results of grain size analysis in consultation with NAE.

** CLDS Reference Site.

Together, these tasks address the potential risks to marine life posed by the material to be dredged:

- **Whole sediment exposure** will be assessed with physical, chemical, and whole-sediment bioassay data [Tasks 5, 6, & 9]. The RIM (EPA/ USACE, 2004) summarizes the wide range of parameters

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included in the assessment. The biological testing incorporates a sediment amphipod and mysid shrimp in particular to identify the potential impacts to sediment-associated organisms.

- **Aquatic life exposures** may be assessed with a chemistry screening approach, but are generally modeled using a mixture of seawater and the material to be dredged corresponding to standard chemical elutriates and SPP samples. Chemical elutriate results are used to ensure that Ambient Water Quality Criteria (AWQC) will not be exceeded at the dredged material placement site (CLDS) four hours after discharge, or outside of the site boundary at any time. SPP toxicity testing results are used to develop a Limiting Permissible Concentration (LPC), and, based on regulatory modelling by ADDAMS/ STFATE, are also used to determine Marine Protection, Research, and Sanctuaries Act (MPRSA) §103 water column compliance [Tasks 7 & 8].
- **Bioaccumulation potential** will also be evaluated to address any potential longer-term effects, measured directly using worm and clam organisms over a 28-day period [Tasks 10 & 11]. Findings will be compared to Food and Drug Administration (FDA) levels and used to evaluate ecological health risks.

A.3.4 Applicable Regulations/ Standards

This project has been designed to collect environmental data needed to characterize the sediment to be dredged within the various dredging units, and determine suitability for placement unconfined in the marine environment under MPRSA §103, detailed in the Ocean Dumping Regulations (Title 40, Code of Federal Regulations, [CFR] 220-229). As such, the work will be guided by NAE's *Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters* (RIM, EPA/ USACE, 2004), the *Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual* (Green Book, EPA/ USACE, 1991), and the *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.* (Inland Testing Manual, EPA/ USACE, 1998). These regulations are adhered to within the jurisdictional area of the NAE by the RIM and the laws and regulations of the New England states (where this FNP project is located).

A.3.5 Project Schedule

The sampling schedule is provided in **Table A-3** and **Figure A-2** along with project milestones and deliverables.

The project schedule is an accelerated schedule. As such, elutriate and biological testing shall occur concurrently with the sampling for Tier 2 evaluation.

A.4 Non-measurement Data Acquisition

AECOM anticipates that relevant grain size or other site information reviewed by NAE for planning purposes would be available if needed. However, these historical data are likely too dated to be applicable for the current site characterization effort.

A.5 Field Activities

The approach selected by NAE to meet the project objectives requires the collection of the following sample types:

- Sediment cores (26 stations within New Haven Harbor)

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- Surface sediment grab sampling (CLDS Reference Site)
- Single- to multiple-depth seawater collection (composite of surface, mid-depth, and bottom water collection at the harbor stations and at the CLDS Reference Site when overlying water depth > 30 ft MLLW, and mid-depth only for depths < 30 ft MLLW)

Sediments retained from the individual harbor collection stations will be maintained as discrete samples until NAE, based on a rapid grain size reporting, approves continuation of the program and the final pooling/composite scheme.

A.5.1 Harbor and CLDS Reference Site Sediment

Sediment within the FNP will be cored to the authorized depth (plus allowable over dredge) to fully characterize the sediment prism that requires removal/dredging. At the reference site, only the surface sediment character is relevant for comparison purposes and so a grab sampler is the sampling equipment of choice.

Large sediment volumes will be needed in the event that the full range of testing is required for the program. This section details the locations, composite preparation, field and laboratory measurements, and QC sampling requirements.

A.5.1.1 Coring Collection Locations

NAE has determined that 26 sampling stations are sufficient to characterize the FNP to be dredged. Station positions are detailed on **Table A-1** and depicted in **Figure A-3**.

Table A-3 Schedule of Milestones and Deliverables

Task	Milestone ¹	Schedule
	TASK NOTICE TO PROCEED	21 Jul 17
	PLANNING	
1, 2	SAP & APP preparation; station position & utility verifications	24 -27 Jul 17
	SAP delivered to NAE after 2 day preparation & station positions verification	27 Jul 17
	APP delivered to NAE following 2 day preparation	27 Jul 17
	New Haven Harbor Master & USCG alerted to NAE sampling needs & timing	5 Jun 17
	NAE SAP & APP review, AECOM finalizes, NAE approves SAP & APP	1-4 Aug 17
	SAMPLE COLLECTION, RAPID TAT SEDIMENT GRAIN SIZE, & SAMPLE POOLING	
3	Field Effort: 10 sediment survey days to collect 26 stations	7-17 Aug 17
	Discrete harbor station sediments shipped to laboratory for 24 h grain size analysis	7-9 Aug 17
	Field Effort: 1-day CLDS Ref sediment and water plus all harbor water stations	17 Aug 17
4	Discrete harbor station grain size analysis (24 h TAT)	8-10 Aug 17
5	Rapid 24 h GS data reported to NAE for review	9-11 Aug 17
	NAE amends sample pooling scheme as needed	11 Aug 17
	NAE approval to proceed as appropriate based on sediment grain size	11 Aug 17
	Bulk sediment composite preparation	20-21 Aug 17

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Task	Milestone ¹	Schedule
	Field Report Delivered to NAE with core logs, photos, and daily activity logs	23 Aug 17
	SEDIMENT CHEMISTRY/GRAIN SIZE (BULK/ COMPOSITE SAMPLES)	
6	Bulk sediment chemistry analysis	20 Aug – 11 Sep 17
	Sediment chemistry data with QC delivered to NAE (RIM format)	25 Sep 17
	ELUTRIATE CHEMISTRY & SUSPENDED PARTICULATE PHASE TESTING	
	Elutriate Preparation	21-22 Aug 17
7	Elutriate Chemistry (plus ambient water)	22 Aug – 13 Sep 17
	Elutriate/Site Water Progress Report Delivered to NAE	13 Sep 17
8	SPP bioassay (begins within 24 hours following Elutriate preparation)	21-25 Aug 17
	SPP progress report delivered to NAE (RIM format)	25 Aug 17
	SPP statistics complete	1 Sep 17
9	10-DAY WHOLE SEDIMENT BIOASSAY	21 Jun - 4 July
	Samples loaded, ammonia equilibration	22-29 Aug 17
	10-day bioassay testing	29 Aug – 8 Sep 17
	10-day whole sediment bioassay progress report delivered to NAE	15 Sep 17
	10-day whole sediment bioassay statistics complete	9 Sep 17
10	28-DAY BIOACCUMULATION BIOASSAY	30 Aug – 28 Sep 17
	28-day bioaccumulation progress report	2 Oct 17
11	TISSUE CHEMISTRY ANALYSIS	
	Tissue analytical chemistry	1-22 Oct 17
	Tissue chemistry statistical analysis	22-28 Oct 17
	Preparation of tissue EDD	28-29 Oct 17
	Tissue progress report	25 Oct 17
	FINAL REPORTS	
12	Draft Final Report Delivered to NAE	9 Nov 17
	Final Report Delivered to NAE	21 Nov – 4 Dec 17

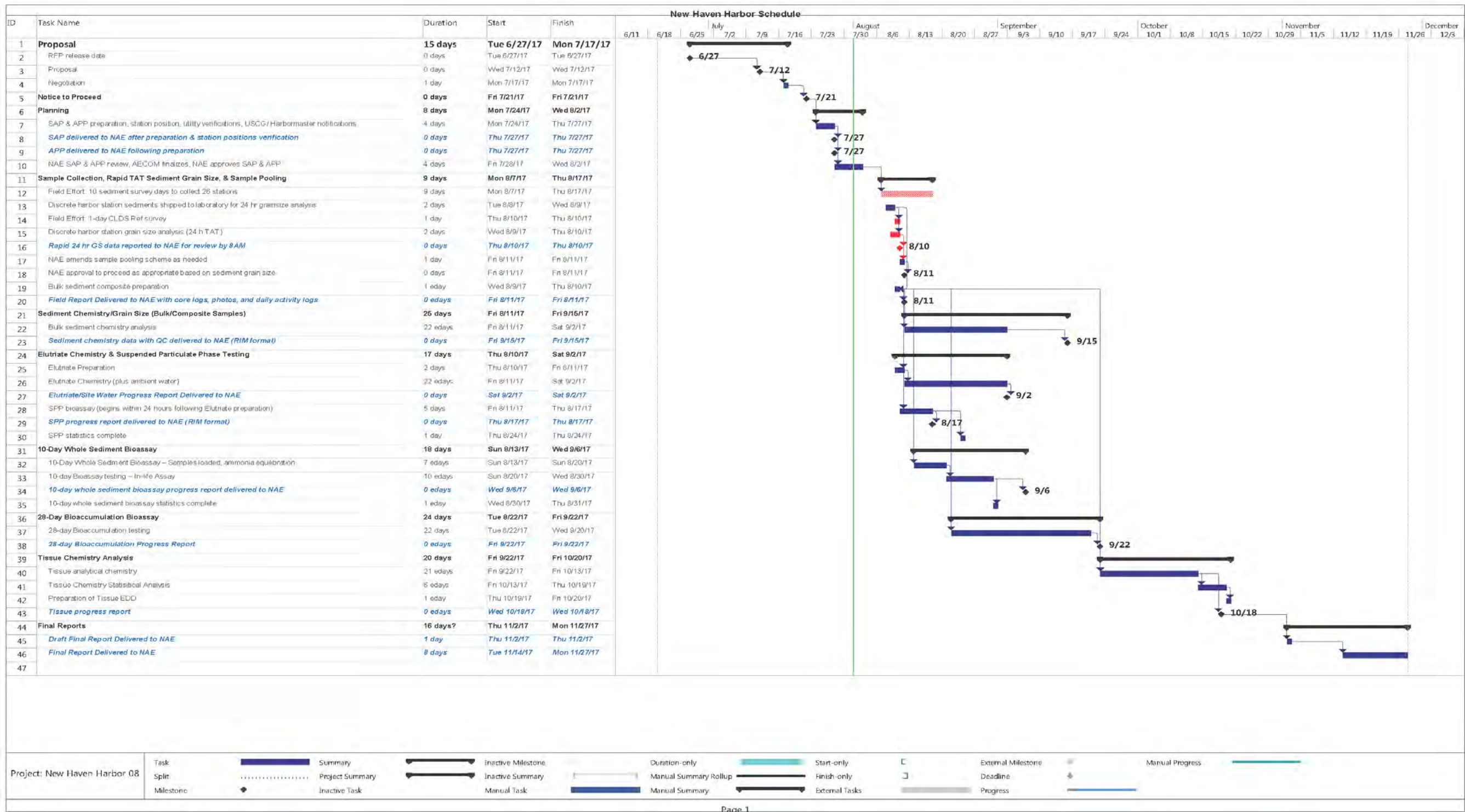
¹NAE Deliverables are bolded

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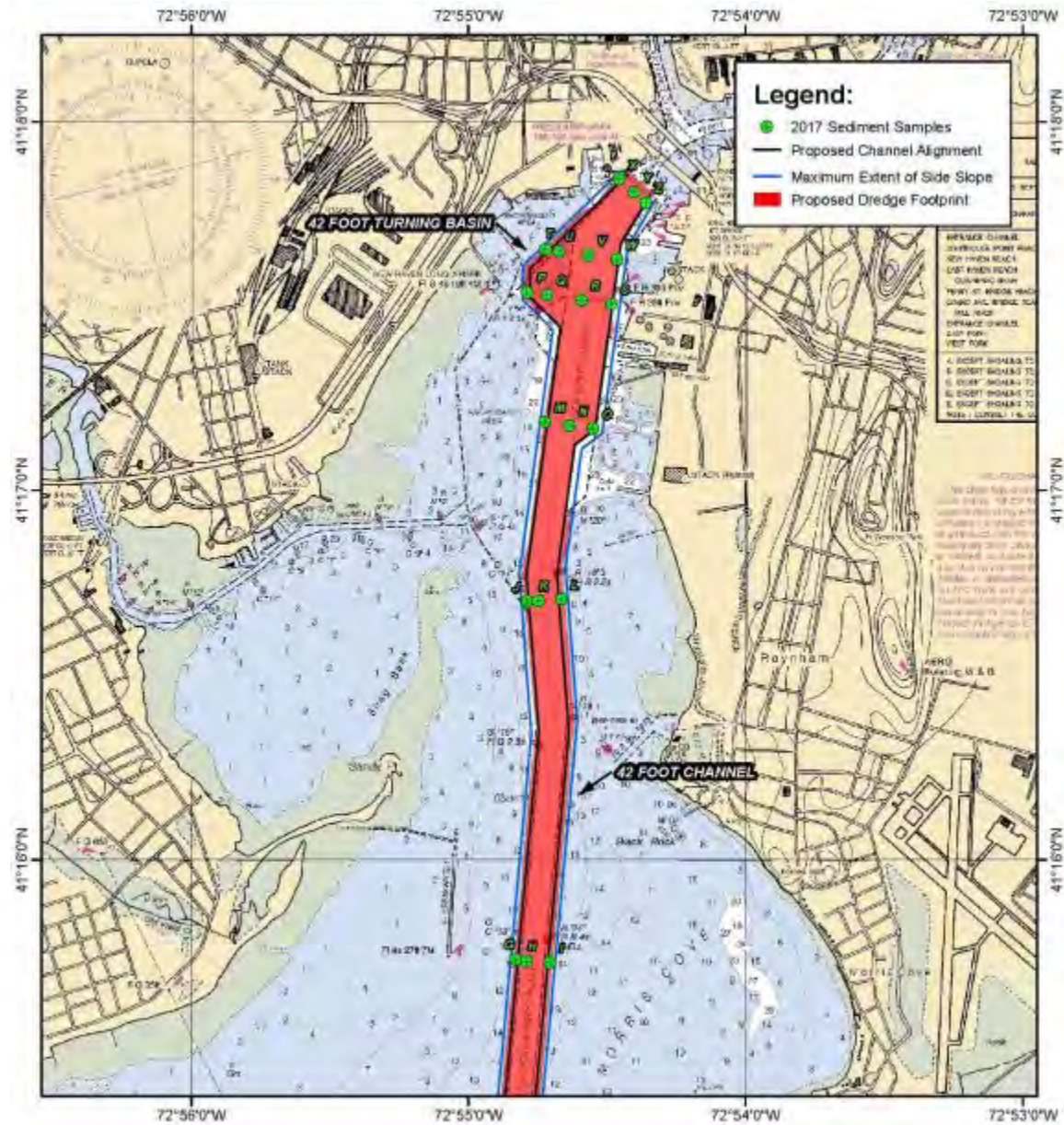
Figure A-2 Anticipated Schedule Gantt Chart



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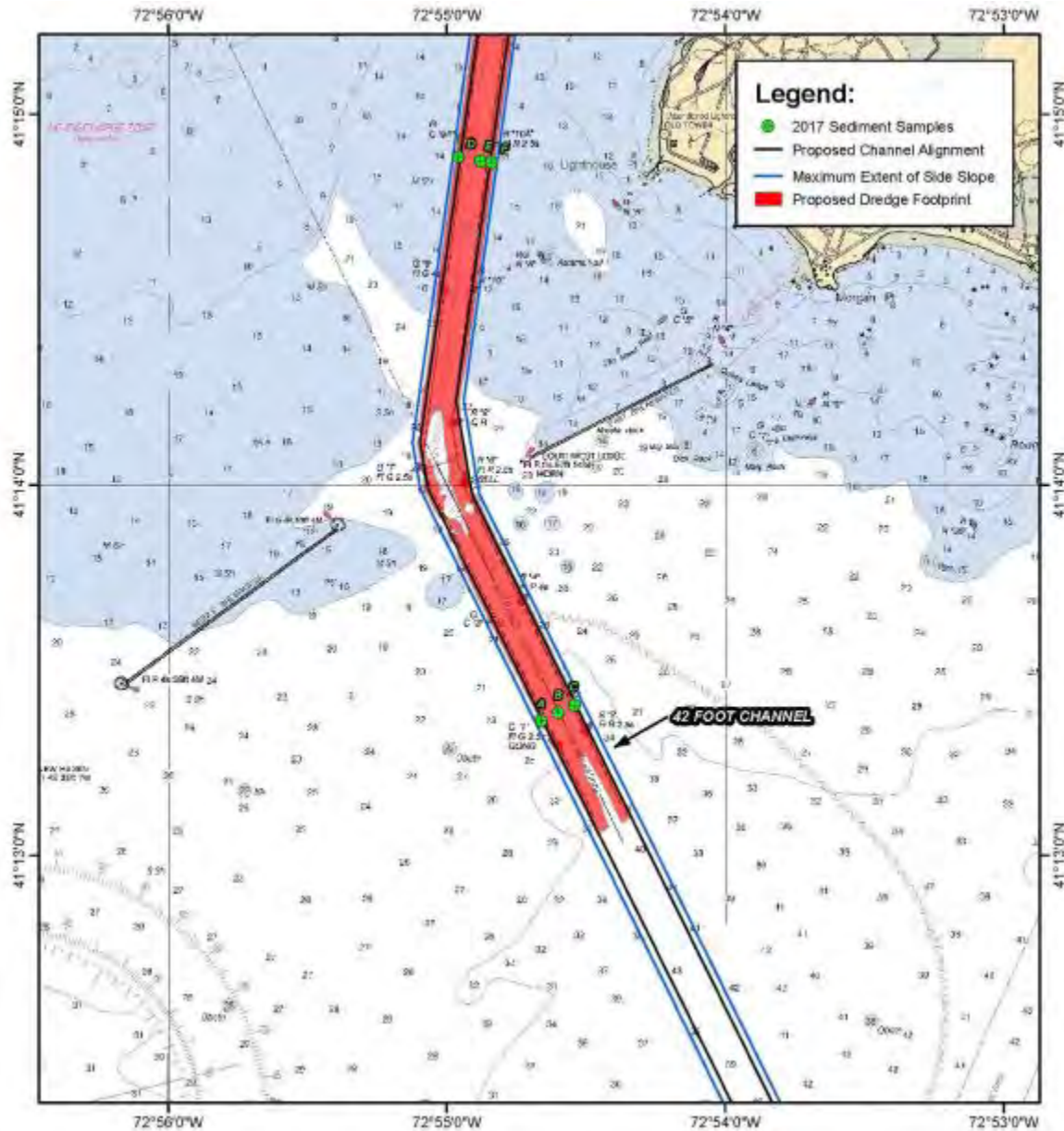
Figure A-3 Sampling Locations: Inner Reach



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Figure A-4 Sampling Locations: Outer Reach





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All plotted/ target sampling positions will be reviewed with the NAE TM as part of the SAP approval process to ensure location accuracy. Channel stations E, H, K, and O are in the vicinity of the Cross Sound Cable. Currently AECOM has generalized mapping information (e.g., NOAA chart/ maps) and communication from the NAE ETL (5/2/17 & 5/11/17 emails from Ben Loyd). OSI is coordinating with the Cross Sound Cable group and has obtained as-built construction information regarding the actual location of the submarine cable prior to the initiation of the coring program. This is to verify target locations are positioned such that damage to the cable will not occur. All utility crossings and outfall locations associated with the sampling areas will also be reviewed with NAE before the field program begins.

A.5.1.2 Discrete/Composite Sediment Sampling Requirements

Initially, the 26 cores will be processed and sub-sampled (up to 2 per core) aboard the sampling vessel and will be maintained as discrete samples. These horizons will be sub-sampled for bulk sediment analytical testing and grain size. The sub-samples will be analyzed for grain size on an expedited schedule. NAE will then review the discrete data and verify the sample composite/ pooling scheme and approve continued testing as appropriate. This sample pooling approach will provide NAE with a smaller set of FNP sample composites to test, thereby reducing the sample collection and testing effort.

The sediment volume needed from each station and station sets that may be pooled together to form composites are detailed on **Table A-1**. As indicated, 25 gallons of sediment will be required for each of the final area composites and an additional 21 gallons (minimum) will be needed from the CLDS Reference Site. Additionally, the sample volumes needed for the array of testing parameters are detailed on **Table A-4** *Sample Mass/ Volume Requirements*.

Sample pooling approved by NAE will be performed at the biological laboratory. Composite preparation procedures are detailed in Section B of this SAP (QAPP).

Table A-4 Sample Mass/ Volume Requirements (minimum)

Parameter	Units	Sediment Volume		Water Volume	
		Per Tested Sample or Composite	CLDS Reference Site	New Haven Harbor	CLDS Reference Site
Sediment Parameters					
Grain Size	L	0.075	0.075	-	-
Metals	L	0.2	0.2		
Organic Compounds	L	0.475	0.475		
Total Organic Carbon	L	3	3	-	-
Aqueous Chemistry (Background Surface Water and Rinsate Blanks)					
PCBs/ Pesticides	L	-	-	12	12
PAHs ¹	L	-	-	6	6
Pentachlorophenol ²	L	-	-	6	-
Metals	L	-	-	1.5	1.5
Elutriate/ Toxicity Testing Parameters					
10-Day Whole Sediment Bioassay	L	2.4	2.4	-	-



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Parameter	Units	Sediment Volume		Water Volume	
		Per Tested Sample or Composite	CLDS Reference Site	New Haven Harbor	CLDS Reference Site
Elutriate Chemistry	L	8	-	360	12
SPP Toxicity Bioassay	L	4	-	100	80
Bioaccumulation Parameters					
<i>Nereis, Macoma</i> Studies	L	60	60	-	-
Bulk Sample Volume (L)	L	78	66	500	102
Bulk Sample Volume (Gal) ³	Gal	21*	17.5*	110	23

¹PAHs measured only in (sediment) equipment blank.

²Pentachlorophenol measured only in background water.

³Minimum sample volume required.

*Per composite

A.5.1.3 Sample Collection and Field & Laboratory Analysis

Navigation. Vessel positioning for all sediment collections will be accomplished utilizing a Differential Global Positioning System (DGPS) Integrated with HYPACK software with an accuracy of 1 meter or less according to AECOM Standard Operating Procedures (SOP) NHH-G-02 (Appendix A). Local tide data will be obtained to calculate tidal height in feet above MLLW. This measurement will facilitate the calculation of the required penetration depth needed to reach the desired project depth. The depths indicated in Table A-1 should be consulted. If the overlying water depth is different from those estimated in Table A-1, the sediment penetration depth will be adjusted accordingly, in consultation with NAE.

Depth to sediment will be measured using a measurement tape/ lead line immediately preceding each coring deployment to identify the exact mudline for coring purposes. Additionally, a precision survey echo sounder with an accuracy of ± 0.1 feet will provide continuous monitoring of sediment depth/ harbor bottom.

Care will be taken to avoid sample contamination from sampling gear, airborne dust, vessel engine exhaust, cross contamination, etc. If wind/current/ traffic conditions allow, engines will be shut off during sampling; otherwise, sampling will be performed upwind of exhaust and contamination sources. Final sample mixing will be performed in the laboratory for greater contamination control.

Collection & Analysis. The harbor locations will be cored using vibracoring equipment according to AECOM SOP NHH-S-03 (Appendix A), and grab samples of the surface sediment from the CLDS Reference Site will be collected using a Ted Young/ Van Veen grab sampler according to AECOM SOP NHH-S-01 (Appendix A). AECOM is planning on using rigid polycarbonate core liners for this project. **Table A-5** lists the equipment intended for use during project performance and equipment calibration /checking requirements are detailed in **Table A-6**. All sampling will be performed as specified in the project Scope of Work dated 31 May 2017.



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Table A-5 Proposed Sampling Gear for the New Haven Harbor FNP Sampling Task

Equipment	Description	Objective
Sampling Vessel	37-foot coring barge ¹	All harbor station sampling
Sampling Vessel	25-foot Parker ¹	Reference station sampling
Refrigerated Storage Vehicle	26-foot Refrigerated Box Truck	Chilled sample storage during the field program
DGPS	AG-132 DGPS with Omnistar and USCG Beacons; Hydrographic Survey Software HYPACK)	Vessel positioning and data collection
Equipment	Description	Objective
Vibracorer	Vibracorer fitted with rigid liners, core cutter, and catcher	The collection of all harbor cores
Grab Sampler	Ted Young/ Van Veen Grab	Reference sediment collection
Water Pump & Tubing	Diaphragm pump and tubing (short length for harbor sampling).	Harbor and CLDS Reference water collections
Niskin Bottle	Messenger activated sampling bottle for specified depths	CLDS Reference water collection
Weight Bearing Line/Cable	Non-contaminating measured lead line	Water depth measurements

¹Conforms to health and safety measures found in the USACE Safety and Health Requirements Manual EM 385-1-1 (November 30, 2014)

Table A-6 Field Instrument Calibration, Checking, and Corrective Action

Parameter/ Instrument	Calibration Frequency	Calibration Standards	Acceptance Criteria/ Corrective Action
Water Depths JRC Precision echosounder (or equivalent)	Initial: Each time instrument is turned on.	Deployable metal plate and metering line	Within 10% of metering line instrument will be replaced
Station Locations Trimble Pro-XRS DGPS (or equivalent)	Initial: Start of field program	Survey of benchmark	3 meter accuracy minimum or DGPs to be replaced
	Check: Daily	Survey of benchmark	
Temperature/ Refrigerated Storage Truck	Check twice daily	Alternate thermometer	Within 0.5°C of the stationary monitoring thermometer. Re-calibrate stationary thermometer as needed.

Initially, one core will be collected from all locations for rapid turn-around grain size and bulk sediment chemistry analysis (total organic carbon, percent moisture, metals, PCBs, pesticides, and PAHs). From locations A, F, G, J, M, P, S, T, W and Z, an additional core will be collected and kept intact for NAE archive. These cores will be received by an NAE archaeologist at the conclusion of the sampling activities. The archive cores will be retained in an upright position at 4°C±2°C. The penetration depth for each core sample



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will be to either the project depth (Table A-1) or refusal, whichever is reached first. Upon sample retrieval, the sampling team will adhere to the following handling sequence:

- Once on deck/ removed from the core barrel, cores will be maintained in an upright position (cores in flexible liners will be hung upright) to allow surface sediment to settle (ca. 15 min) before removing overlying water.
- After overlying water is removed and adhering to contamination control procedures, core liners will be opened longitudinally and cores split (moving from lower clean to upper dirty) for logging purposes using pre-cleaned stainless steel utensils.
- Sediment profiles will be described and recorded on core log forms along with digital photographic references (Attachment 1).
- Photographs of each core will include core number, date, orientation (top, bottom) and scale. Descriptions will include general texture, color, odor, strata, core length, depth of penetration and any other pertinent observations.
- The first core from each location will be visually described/logged and if significant vertical stratification is observed within the sediment column (greater than two feet in thickness), then subsamples will be collected from each horizon for grain size and analytical parameters. If possible, NAE will be contacted to discuss the findings. It is anticipated two subsamples per core will be collected.
- Cores showing significant differences will be retained in the liners.
- The presence of live eelgrass in any sample will be noted and a count of eelgrass stems with roots/ shoots recorded.
- Samples will be chilled while on board, and transferred to a refrigerated box truck daily during field operations with temperature monitored to ensure that the storage temperature is maintained at $4^{\circ}\text{C} \pm 2$.

If less than 80% core recovery is achieved, the core sample recovered will be retained but considered insufficient. At each station where this occurs, another attempt will be made to recover a sufficient sediment core. All sample collections will also be recorded on Daily Activity Logs (Attachment 2). Project documentation requirements are provided in Section A.6.

On a daily basis, the discrete grain size samples/ bulk chemistry samples will be transported via laboratory courier for rapid 24-hour reporting. As the grain size data come in, NAE will have the discrete grain size data and will provide guidance regarding the sample pooling/ composite scheme, and whether the full scope of remaining tests is to proceed on all FNP reaches.

Once the final composite scheme has been approved by NAE, additional sediment cores will be collected from the 26 locations to achieve the volume required to conduct the elutriate and biological testing. These subsequent cores will be collected and the appropriate depth intervals can be transferred directly into the sampling containers (e.g., buckets) without need for additional examination.

All remaining samples will be delivered to the laboratory performing the sample pooling/ composite preparation at the end of the final (water collection) field sampling day. At the laboratory, sub-samples will be collected equally from each horizon required to create a composite sample. By this schedule, the



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composite formation may begin without delay, given the short 14 day hold time limitation for the water used in the project bioassays (**Table A-7** and Attachment 5).

After the sample composites are prepared, with NAE's approval, the elutriate chemistry (metals, PCBs, pesticides, and PAHs) and biological tests (SPP, 10-d whole sediment, 28-d bioaccumulation bioassays, and tissue analysis) may proceed. Refer to the task order QAPP (Section B) for a listing of the detailed parameters and species to be tested. The project will follow the schedule/ tiered approach laid out in **Table A-3** and **Figure A-2**.

Table A-7 Sample Container, Preservations, and Holding Time Requirements

Sediment Parameters	Volume/Mass	Container	Preservation	Storage	Holding Time
Physical Parameters	8-oz	Plastic	Chill	4±2 °C	NA
Chemistry	16-oz	Amber glass	Chill or Freeze	4±2 °C	28 days (Hg) 180 days (other metals)
Bulk Chemical/ Biological Testing Material	5-Gal Buckets (see Tables A-1 and A-4 for vol)	Plastic	Fill Completely	4°C dark/airtight	90 days

Aqueous Parameters	Volume/Mass	Container	Preservation	Storage	Holding Time
Metals	1-L	Plastic	HNO ₃ to pH<2	4±2 °C	28 d (Hg) 180 d (other metals)
PAHs¹	1-L	Amber Glass	Chill	4±2 °C	7 d (extract)/ 40 d (analyze)
Pesticides	1-L	Amber Glass	Chill	4±2 °C	7 d (extract)/ 40 d (analyze)
PCBs	1-L	Amber Glass	Chill	4±2 °C	7 d (extract)/ 40 d (analyze)
Pentachlorophenol	1-L x 2	Amber Glass	Chill	4±2 °C	7 d (extract)/ 40 d (analyze)
Bulk Chemical/ Biological Testing Material	5-Gal Cubitainers (see Tables A-2 and A-4 for vol)	Plastic	Fill Completely	4°C dark/airtight	14 d

¹PAHs measured only in (sediment) equipment blank

²Pentachlorophenol measurement not needed in sediment EB; only pump EB and chemical elutriate.

A.5.1.4 QC Samples & Frequency

Contamination control is one of the important aspects of environmental sample collection efforts. For this reason, equipment blank QC samples will be collected from all equipment that comes in contact with the sediment and surface water samples.



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A total of four sediment equipment blanks will be collected during the program:

- One equipment rinse blank will be collected from the NHH coring equipment;
- One equipment rinse blank will be collected from the NHH water sampling equipment;
- One equipment rinse blank will be collected from the CLDS grab sampling equipment; and
- One equipment rinse blank will be collected from the CLDS water sampling equipment.

In each case, high purity deionized water (DIW) will be poured over collection equipment (e.g., surface water sampling bottle, core liners, cutters, catchers, and processing utensils or grab sampler) or run through the pump, and collected in a chemistry container set (**Table A-4**).

A standard set of laboratory QC will be included in the analytical program as defined in the QAPP, but will not require any additional volume collected during field operations beyond those mass/ volumes already specified (**Table A-1** and **Table A-4**).

A.5.1.5 Sample Containers and Preservation Techniques

The sediment storage containers specified for the project are provided on **Table A-7**. Large/ bulk sediment samples will be transferred to UN-Compliant plastic 5 gallon buckets, smaller discrete samples needed for rapid grain size analysis and other purposes will be transferred to smaller plastic and glass containers. Seawater samples will be stored in 5 gallon cubitainers. All samples will be transferred to a refrigerated storage truck on shore.

Subsamples from each station collected for the purposes of station specific grain size analysis and for chemistry will be containerized and preserved/ stored as specified on **Table A-7** and transferred to the analytical laboratory (Alpha). Tissue samples will not be collected during field activities; the storage of tissues obtained from laboratory bioaccumulation bioassays is addressed in Section B.7-3 and **Table B-10**.

A.5.1.6 Decontamination Procedures

Sediment cores will be collected in new core liners that do not require decontamination. The coring equipment that contacts project samples (e.g., core head, catcher, & splitting equipment) will be decontaminated between deployments according to SOP NHH-G-03 (Decon Level 1). The grab sampler will also be cleaned thoroughly to remove any dust/ film before the reference sediment is collected. Level 1 decontamination procedures (SOP NHH-G-03) applied to sediment collection equipment corresponds to the following procedure:

- Non-phosphate soap solution wash/ brush-down;
- Thorough rinse with site water

Re-cleaning between discrete grab samples at the CLDS Reference Site will not be necessary unless the grab sampler is compromised in some way as determined by the field scientist. Stainless steel spoons used to homogenize the sediment will be cleaned in the same manner.



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A.5.2 New Haven Harbor and CLDS Reference Site Water

As required by NAE's SOW, seawater from the harbor will be used in the preparation of chemical elutriates and SPP samples and seawater from CLDS Reference Site will be used for preparing dilutions in the SPP toxicity testing dilution series. Given the inherent purity of seawater, collection and handling procedures must follow strict contamination control procedures as discussed in this section. To minimize sample contamination risks, seawater will be collected using a high purity/ pre-cleaned diaphragm pump and tubing system.

A.5.2.1 Water Collection Locations

Water sample collections are planned in the vicinity of each composite group in the proposed dredge area. Water samples will be collected using either a non-contaminating pump with dedicated tubing, or a discrete grab water sampler per AECOM SOP NHH-W-01 (Appendix A). Seawater will also be collected at the CLDS Reference Site for the purposes of SPP dilution series preparations.

Water will be collected from mid-depth when the overlying water depth is less than 30 feet. Where water depth exceeds 30 feet, a composite sample will be created from near surface, mid-depth, and near bottom (3 feet above sediment).

A.5.2.2 Bulk Water Sampling Requirements

As indicated in **Table A-2**, the project team anticipates pooling selected sample groups before full-scale testing commences. To meet the full range of potential testing requirements, a minimum of 123 gallons of seawater will be collected from the harbor and 23 gallons from the CLDS Reference Site (**Table A-2** and **Table A-4**).

A.5.2.3 Sample Collection and Field & Laboratory Analysis

Navigation. The same navigation equipment and protocol used for the sediment collection effort will be used for the water collection effort (AECOM SOP NHH-G-02; Appendix A).

Seawater Collection. Seawater collections at harbor locations will proceed step-wise “up gradient” until the last (inner harbor) water is collected for added cross-contamination control since inner harbor stations are expected to contain higher levels of turbidity and trace chemical constituents relative to outer harbor waters.

Seawater from the harbor area (site water) and the reference area (SPP dilution water) will be collected using a pre-cleaned diaphragm pump and CFLEX™ tubing system at the surface (three feet below the surface), at the mid depth, and near the sediment bottom (three feet above the sediment surface) where water is greater than 30 feet deep. For shallower locations (less than 30 feet of water), water will be collected from mid-depth only. Given the water depth at the reference area, a Niskin bottle may be utilized. **Table A-5** includes the multi-parameter instrument sensors intended for use during water collection portion of the project and instrument calibration requirements are detailed in **Table A-6**.

All water column collections will be performed according to SOP NHH-W-01 (Appendix A). The volume to be collected at each proposed location needed for the project is detailed in **Table A-2** and **Table A-4**. Water collections will be recorded in the field log book and on daily activity logs (Attachment 2).

Pertinent field observations (turbidity, sheen, blooms, etc.) will be recorded on the field collection log and all water collections will also be recorded on daily activity logs (Attachment 2). Project documentation requirements are provided in Section A.6.



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In the evening of the final water collection field day, all samples will be transferred to the biological laboratory (ESI) using the refrigerated storage truck. Upon NAE's final approval, sample preparations may begin the following day, to ensure adherence to 14-day hold time for all surface water to be used in the elutriate preparation and the SPP bioassays.

A.5.2.4 QC Samples and Frequency

QC sampling of the water collection program will include collection of a pump blank during the field effort to verify operation cleanliness. To prepare the equipment blank, high purity DIW will be pumped through all (connected) tubing sets and dispensed to a chemistry container set (**Table A-4**). If utilized, a Niskin bottle will also have an equipment blank prepared. It is therefore anticipated that two equipment blanks will be collected for surface water sampling.

A standard set of analytical QC samples will be included in the laboratory program, but additional volume beyond that already specified (**Table A-4**) will not be required.

A.5.2.5 Sample Containers and Preservation Techniques

Bulk water samples collected in the field will be contained in clean/ new five gallon plastic cubitainers and placed on ice for preservation. Discrete seawater samples for rinsate blanks will be contained in smaller plastic (metals) and glass (trace organics) bottles. Water sample containerization and preservation requirements are detailed on **Table A-7**. In addition to icing immediately following collection, the water samples will be transferred to the refrigerated box truck upon returning to the dock.

A.5.2.6 Decontamination Procedures

The tubing used to collect the water will be new/ previously unused and cleaned prior to use in the following manner:

- Deionized water (DIW) rinse
- Dilute Liquinox™ rinse
- DIW rinse
- Seawater flush for two minutes before collection

If tubing is used at the CLDS site, separate tubing sets will be used for harbor water vs. the higher purity CLDS Reference Site water to further minimize any potential cross-contamination. Further cleaning will not be necessary since water collections will proceed step-wise "up gradient" until the last (inner harbor) water is collected. However, each water station sampling will begin with a two minute site water flush.

A.6 Field Operations Documentation

Field documentation will include sediment core and grab sampling logs, with narratives describing relative grain sizes, color, odor, strata, core length and depth of penetration along with other pertinent sediment sampling observations. As indicated, digital photos of each core, including core number, date, top, bottom, and scale will be collected and sampling activities will be recorded on daily activity logs. Seawater collection data (profile information, unique observations) will be recorded in the field logbook.



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The full range of information to be included in field records is provided on **Table A-8**. Field documents developed for this task are provided as Attachments 1 and 2.

A.6.1 Field Logbook and Field Sheets

Field logbooks will provide the means of recording the data collection activities performed during the investigation. As such, entries will be described in as much detail as possible so that persons reviewing site data can reconstruct a particular situation without reliance on memory.

Field logbooks will be bound field survey books or notebooks, and assigned to the field personnel, but will be stored in the project files when not in use. Each logbook will be identified by the project-specific document number.

The title page of each logbook will contain the following:

- Person to whom the logbook is assigned;
- The logbook number;
- Project name and number;
- Project start date; and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, and the signature of the person making the entry will be entered. The names of any visitors and the purpose of their visit will also be recorded in the field logbook.

Table A-8 Summary of Field Information

General Information	Record Location ¹
Project/task name/general location	All (A,B,C,D, and E)
Personnel on site (AECOM, clients, site contacts, regulators, oversight personnel, subcontractors, general public)	A, B
Results of phone calls, conversations	B
Chronology of activities, including mobilization, investigatory activities, and demobilization	B
Weather conditions (initial and any changes; temperature, barometric pressure, wind conditions, precipitation)	B
Tidal and atmospheric information (if applicable)	B, E
Subcontractors, description of services to be provided, and any issues (equipment problems, corrective action, stand by time)	B
Health and safety (H&S) tailgate meetings, H&S monitoring	Refer to APP
Description of major equipment (survey vessels, sampling platforms, sampling devices) and any problems or conditions that might impact performance or data quality	A, B
Equipment decontamination	D



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General Information	Record Location ¹
Any pertinent field observations such as difficulties in sampling or conducting measurements or unusual circumstances that could affect data quality (instrument problems, contamination sources)	B
Deviations from approved plan (schedule, relocation/elimination of locations, change orders), including rationale and approval	A, B
Sample collection and transfer summary, custody information from collection through analysis, to final disposal	C, D
<i>Field measurements</i>	
Description of Instruments (make, model, serial number) and inspection	E
Instrument calibration (date, time, personnel, standard, standards used/expiration date, and results)	E
Measurement date, time, location/station, results (units, any correction factors applied, calculations (if applicable))	D, E
Identity of person performing the measurements	D, E
<i>Sampling information</i>	
Equipment description and inspection	B
Sample selection criteria/rationale (if different from plan)	A, B
Sample location (GPS coordinates, depth, compass/distance from fixed points)	B
Sample manipulations (homogenization, compositing, preservation)	D
Sample ID, (segment/interval), date, time, and sampler identity	B, D
<i>Sample parameters, containers (size/type), preservation</i>	
Field and QC sample ID, storage container and conditions for each (sub)sample/parameter set	C, D

¹ A: Daily Activity Log; B: Field Notebook; C: COC Form; D: Sample Processing Form; E: Water Quality Data Log

Field logbooks will be supplemented by standardized forms, such as coring logs and daily activity logs (Attachment 1 and 2). All measurements made and samples collected will be promptly recorded. All entries will be made in permanent ink, signed, and dated, and no erasures or obliterations will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark that is signed and dated by the sampler. Whenever a sample is collected, or a measurement is made, latitude and longitude information will be recorded. The number of photographs taken of the sampling location will be noted. All equipment used to make measurements will be identified, along with time and date of calibration and checking.

A.6.2 Photographic Records

Each sediment core will be photographed with a scale/ measuring tape for future reference. Each photograph will contain the core ID, the date, orientation (top/ bottom), a scale along the entire core length, and unique features (indicated with a pointer). Photographic records (electronic format) will be maintained in the project files and included in the field report.

A.6.3 Sample Documentation

The data management strategy for this task comprises the following elements:



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- Assignment of unique sample codes. This code is used to track the sample from collection, through the analysis, to reporting.
- Data retention. Data will be retained in accordance with the requirements stated in Section A.6.5 of this SAP.

A.6.3.1 Sample Identification/Numbering

For each set of samples collected, the sample containers will be labeled with the following information:

- Project Name (New Haven Harbor DM Suitability Study 2017);
- Unique sample identification number (e.g., NHH-A thru Z, or NHH-CLDS)
- Date and time of sample collection;
- Name or initials of collector;
- Sample preservation/storage condition; and
- Type of analysis (grain size, etc.).

QC samples will be labeled in the following manner:

- Equipment blanks: NHH-EB-XXXX-mm/dd/yy where XXXX corresponds to the equipment type (either pump or grab) and mm/dd/yy corresponds to the collection date.
- Replicates: The sample identification (ID) is to be appended with “-Rep”

Water samples collected for the preparation of SPP/ Elutriate mixtures will be labeled NHC-1 thru NHC-8 as outlined in **Table A-2**.

A.6.3.2 Chain-of Custody Records

Custody is one of several factors necessary to satisfy the two major requirements for data admissibility: relevance and authenticity. Sample custody is addressed in two parts: field sample collection and laboratory analysis. Refer to AECOM SOP NHH-G-04 (Appendix A) for further details.

The field team is personally responsible for the care and custody of the samples until they are transferred or dispatched properly to the laboratories. Field procedures have been designed such that as few people as possible will handle the samples.

All sample containers will be identified by the use of adhesive sample labels. The sample numbering system is presented in Section 6.3.1. Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the pen would not function in wet weather.

Samples will be accompanied by properly completed Chain-of-Custody (COC) forms. The sample codes will be listed on the COC form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of



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samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage location. An example COC form is attached (Attachment 3).

A.6.3.3 Field Instrument Calibration & Documentation

As discussed in Section A.5 *Field Activities*, navigational positioning will be acquired using DGPS instrumentation. Field measurements will include station position information.

Navigation instrumentation will be checked daily each day that seawater is sampled, and checked at the end of each seawater sampling day, as specified on **Table A-6**, following the procedures detailed in SOP NHH-G-02 (Appendix A).

Records of navigational accuracy and checking results will be recorded at the time of calibration or checking in the bound field logbook.

A.6.3.4 Documentation Procedures/ Data Management and Retention

Entries in field logbooks and on standardized forms will be reviewed for outliers and omissions prior to leaving the sampling site. Navigational data will be collected using DGPS integrated with PC-based navigational software. Actual survey positions will be documented at the time of sample collection on the electronic navigation charts and downloaded as survey records.

Photographic records collected of each core/ sample with scale during the course of study will be maintained in the project directory established for the project. If a case arises whereby a unique horizon >2 feet in thickness is encountered, photograph(s) should be transmitted to NAE (if possible) for real-time discussion and decision-making regarding potential segregation of the material.

Any potential deviation from the workplan must be discussed with the Task Order Manager and NAE TM and corrective actions documented as discussed in Section 10. If uncertainties arise, then the Chief Scientist may suspend activities until clarification is obtained from the task leadership (AECOM Task Order Manager, NAE TM).

AECOM's data manager, Mr. Jim Herberich, will establish an environmental database for the project where all measurement data will reside. Field station positions, collection dates/times, field analytical data and field observations will be included. Sample collection times will begin the COC record, based on unique sample IDs for discrete and composite samples, and all physical, chemical or biological laboratory data will be maintained. The database will provide the source data for project progress, draft and final reports. Sediment data will be provided in EDD format matching NAE's preferred format among the RIM specified formats. All EDDs will be checked using the most current EDD Checker available on the RIM website. Only EDDs that pass the Checker without error will be submitted, along with the Checker report.

All field/ project records will be maintained on the project website accessible only to designated AECOM and NAE personnel for a minimum of 5 years. Archived project files will include all field records as specialized log forms and measurement data, station position EDDs, logbook photocopies, photographs, calibration records, corrective action reports, and audit reports. The field report, final maps, progress reports, laboratory reports, and the draft and final Task Order reports will also be placed on the project website, as discussed in the QAPP Section of this SAP (Section B.13 *Reports*).



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A.7 Sample Packaging and Shipping

All sample shipments will be accompanied by the COC record identifying the contents. The original record and one copy will accompany the shipment, and one copy will be retained by the sampler and placed in the project files.

Bulk samples will be transported via refrigerated truck; discrete samples will be properly packaged on ice at 4°C for shipment and dispatched to the laboratory for analysis according to AECOM SOP NHH-G-05 (Appendix A). A separate signed COC will be enclosed in and secured to the inside top of each sample box or cooler.

All project samples will be transferred by project couriers; common carriers are not anticipated. If common carriers become necessary for discrete sample shipments, then samples will be placed in plastic coolers for storage and transfer according to procedures detailed in AECOM SOP NHH-G-05. In these cases, custody seals will be attached to the front and back opposite corners of the cooler and covered with clear plastic tape after being signed by field personnel. The cooler will be strapped shut with strapping tape in at least two locations and the waybill will be retained in the project file.

A.8 Field Assessment/ Inspection

Sampling and subcontractor equipment will be checked by the Chief Scientist or designee during mobilization, initially before use, and at the end of each day. Furthermore, a field audit may be scheduled at the discretion of the Task Order Manager to verify the inspection process and to review methods and documentation from collection through final packaging and shipment.

Preliminary results of the audit will be reviewed with the Task Order Manager to ensure that deficiencies adversely affecting data quality are immediately corrected.

For this task, critical supplies for field activities will be tracked by the Field Survey Task Leader in the following manner.

Critical Supplies and Consumables	Inspection Requirements and Acceptance Criteria
Sample Containers	Visually inspected upon receipt for cracks/ breakage/ cleanliness. Must be accompanied by certificate of analysis.
Field Equipment & Instrumentation	Functional checks to ensure proper operation and testing (echo sounder, DGPS)
Sampling Equipment	Visually inspected for obvious defects, damage, and contamination

Supplies and consumables not meeting acceptance criteria will initiate the appropriate corrective action. Corrective measures may include repair or replacement of measurement equipment, and/or notification of vendor and subsequent replacement of defective or inappropriate materials. All actions will be documented in the project files.

Field equipment testing activities are listed in **Table A-6** along with non-conformance corrective actions. The laboratory system of inspection and acceptance of supplies and consumable is documented in each project laboratory QA manual.



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Field data will be reviewed daily by the Field Survey Task Leader to ensure that the records are complete, accurate, and legible and to verify that the sampling procedures are in accordance with the protocols specified in the FSP and QAPP.

A.9 Nonconformance/Corrective Actions

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or poor performance that can affect data quality. Corrective action proposed and implemented should be documented in QA reports to management. Corrective action should only be implemented after approval by the Task Order Manager or designee.

Field Corrective Action

Corrective action in the field may be needed when the sample network is changed (i.e., more/ less samples, sampling locations other than those specified in the workplan, etc.), or when sampling procedures and/ or field analytical procedures require modification, etc., due to unexpected conditions. The field team may identify the need for corrective action. The Chief Scientist and Task Order Manager will notify the NAE Technical Manager who will approve the corrective measure. The Chief Scientist will ensure that the corrective measure is implemented by the field team.

Corrective actions will be implemented and documented in the field records (SOP NHH-G-01 in Appendix A). Documentation will include:

- A description of the circumstances that initiated the corrective action;
- The action taken in response;
- The final resolution; and
- Any necessary approvals.

No staff member will initiate corrective action without prior communication of findings through the proper channels. If uncertainties arise in the field, the Chief Scientist may suspend field activities until clarification is obtained from the NAE TM.

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Quality Assurance Project Plan

Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut

COMMITMENT TO IMPLEMENT THE ABOVE QUALITY ASSURANCE PROJECT PLAN

Ken Simon
Bioassay Laboratory QA Manager

Date

Liz Porta
Chemistry/Physical Lab Project Manager

Date

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B.0 Quality Assurance Project Plan (QAPP)

B.1 Project Laboratory Organization and Responsibilities

Two laboratories will support the NHH environmental testing task: Alpha Analytical (Alpha), and EnviroSystems Inc. (ESI). The laboratory organization and work breakdown is depicted in **Figure A-1** and **Table B-1**.

Table B-1 Laboratory Roles and Responsibilities

Sediment grain size and bulk chemistry			
Task 5 <ul style="list-style-type: none">Rapid 24 h Discrete Grain Size Reporting	Liz Porta. Alpha Analytical Physical Testing Laboratory Supervisor	Laboratory Manager: Christopher Ouellete QA Officer: James Todaro Sample Custodian: Kim Bailey	Alpha Analytical 8 Walkup Drive Westborough, MA 01581 508-898-9220
Task 6 Bulk Sediment Chemistry			320 Forbes Boulevard Mansfield, MA 02048 (508) 822-9300
Sample processing/composite formation, elutriate and SPP preparation, elutriate, and tissue chemistry, and bioassays			
Task 4 <ul style="list-style-type: none">Sample processing, bulk sediment composite formationStandard chemical elutriate & suspended phase particulate (SPP) sample preparation	Kirk Cram, ESI Processing Laboratory Supervisor	Laboratory Manager: Ken Simon QA Officer: Catie Sasso Sample Custodian: James Provencher	EnviroSystems Inc., 1 Lafayette Rd, Hampton, NH 03842 (603) 926-3345
Task 7 <ul style="list-style-type: none">Elutriate Chemistry	Kirk Cram, ESI Aquatic Bioassay Supervisor		
Task 8 <ul style="list-style-type: none">SPP bioassays	Kirk Cram, ESI Aquatic Bioassay Supervisor		
Task 9 <ul style="list-style-type: none">10-day whole sediment bioassays	Kirk Cram, ESI Sediment Bioassay Supervisor		
Task 10 <ul style="list-style-type: none">28-day bioaccumulation bioassays	Kirk Cram, ESI Sediment Bioassay Supervisor		
Task 11 <ul style="list-style-type: none">Tissue Chemistry	Kirk Cram, ESI Laboratory Supervisor		

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The Alpha Laboratory Manager is Christopher Ouellette, and the Alpha Project Manager will be Ms. Liz Porta. Ms. Porta will have responsibility for technical, financial, and scheduling matters related to physical and chemistry testing tasks (Task 5 and 6). Ms. Mary O'Connell-Kozik, AECOM's Physical/Chemistry Laboratory Coordinator, in general will be the point of contact for the laboratory task leads and safety and quality managers.

The ESI Laboratory Manager is Mr. Ken Simon, and the ESI Project Manager will be Mr. Kirk Cram, with responsibility for technical, financial, and scheduling matters related to sample processing, chemical analyses, and bioassay testing tasks (Tasks 4, 7, 8, 9, 10, and 11). Ms. Christine Archer, AECOM's Biology/Bioassay Laboratory Coordinator, will be the point of contact for the biology laboratory task leads and safety and quality managers. Ms. Mary O'Connell-Kozik, AECOM's Chemical Laboratory Coordinator, will also interface with the analytical laboratory task leads and safety and quality managers.

The Laboratory Managers in these organizations are ultimately responsible for the data produced by the laboratory. Specific responsibilities include:

- Implementing and adhering to the laboratory QA manual and all corporate policies and procedures within the laboratory,
- Approving the standard operating procedures (SOPs),
- Maintaining adequate staffing documented on organization charts, and
- Implementing internal/external audit findings corrective actions.
- Laboratory QA Coordinator
- The Laboratory QA Coordinator reports to the Laboratory Manager. Specific responsibilities include:
 - Approving SOPs;
 - Assessing and maintaining the laboratory QA manual implementation within the facility operations;
 - Recommending resolutions for ongoing or recurrent non-conformances within the laboratory;
 - Performing QA assessments; and

Reviewing and approving corrective action plans for non-conformances, tracking trends of non-conformances to detect systematic problems, and initiating additional corrective actions as needed.

The Laboratory Project Manager in these organizations is the primary point of contact between the laboratory and the appropriate AECOM Laboratory Coordinators. Specific responsibilities of the Laboratory Project Manager include:

- Monitoring analytical and QA project requirements for a specified project,
- Acting as a liaison between the client and the laboratory staff,
- Reviewing project data packages for completeness and compliance to client needs, and
- Monitoring, reviewing, and evaluating the progress and performance of projects.

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B.2 Data Assessment and Responsibilities

Organization of the data assessment tasks are detailed in **Table B-2**. Chemical data will be verified by the Alpha QA department to check that the laboratory tasks followed the specified methods and conform to the QAPP including measurement quality objectives (MCOs) and reporting specifications. Chemical laboratory reports and data/EDD submittals will also be validated to check for completeness, evaluate quality control sample results and apply validation qualifiers as needed based on MCO non-compliance (e.g., blank contamination, etc.).

Similarly, the biological data will be verified by the ESI QA department to check that the laboratory tasks followed the specified methods, and conform to the QAPP specifications, including ancillary bioassay test water quality data collection.

B.3 Data Quality Objectives

The data quality objectives (DQOs) for this task have been established by EPA and the Corps of Engineers as documented in the RIM document (EPA/USACE, 2004). The DQO process, that is –problem statement, goal identification and study questions, new data/analysis requirements, study boundaries, analytical approach with corresponding performance/acceptance criteria - have been incorporated into this SAP.

Table B-2 Data Assessments Organization and Responsibilities

Task	Data Verification Responsibility	Data Validation Responsibility
Task 5 <ul style="list-style-type: none"> Rapid 24 h Discrete Grain Size Reporting Task 6 <ul style="list-style-type: none"> Bulk Sediment Chemistry 	James Todaro Alpha Analytical, 320 Forbes Boulevard Mansfield, MA 02048 (508) 822-9300	Sharon McKechnie, AECOM 250 Apollo Drive Chelmsford, MA 01824 978-905-2317
Task 4 <ul style="list-style-type: none"> Sample processing, bulk sediment composite formation Standard chemical elutriate & SPP sample preparation 	Catie Sasso, ESI QA Officer 1 Lafayette Rd, Hampton, NH 03842 (603) 926-3345	Christine Archer, AECOM 1155 Elm Street Suite 401 Manchester, NH 03101 603-622-1556
Task 7, & Task 11 <ul style="list-style-type: none"> Elutriate Chemistry Tissue Chemistry 		Sharon McKechnie, AECOM 250 Apollo Drive Chelmsford, MA 01824 978-905-2317
Task 8, Task 9, & Task 10 <ul style="list-style-type: none"> SPP bioassays 10-day whole sediment bioassays 28-day bioaccumulation bioassays 		Christine Archer, AECOM 1155 Elm Street Suite 401 Manchester, NH 03101 603-622-1556

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B.3.1 Data Use Background

The assessment of dredged material typically follows a tiered testing approach. If data collected in earlier tests are insufficient to provide a basis for an environmental conclusion, then additional testing (higher level tiers) is undertaken to collect additional data. For example, if the 24-hour TAT grain size data identified that the accumulated sediment to be dredged was only coarse-grained (i.e. sandy) material, then the exclusionary criteria admitting placement in the marine environment unconfined without further testing may be met. Conversely, fine-grained sediments will require added testing before an impact assessment can be completed and a decision made with respect to the final dredged material placement.

Based on NAE decision-making, physical, chemical, and biological (bioassay) data may be generated during the performance of this Task Order to evaluate potential AWQC and LPC exceedances (Elutriate & SPP bioassays), potential toxicity to sediment-associated organisms (10-d whole sediment bioassay with an amphipod and shrimp), and potential chemical bioaccumulation (28-d bioaccumulation clam and worm bioassays) with corresponding tissue chemistry information.

Overall, the data will be used to evaluate potential environmental impacts associated with the proposed maintenance dredging project in the New Haven Harbor FNP, but each data type will be addressed separately in the following sections.

B.3.2 Measurement Quality Objectives

Measurement quality objectives (MQOs) for sensitivity are well established and published in the RIM document for this task. Required methods and corresponding target reporting limits are provided in the RIM document, summarized in this section, and detailed on **Table B-3** (sediment physical & chemical measurements), **Table B-4** (aqueous chemistry), **Table B-5** (tissue chemistry).

Table B-3 Sediment Methods, Reporting Limits, and Project Required Detection Limits

Parameter	Method Reference	Method Number	Lab MRL	Project Required RL	RL Units
Physical Tests					
Total Solids/Water Content	ASTM	D-2216	1.0	1.0	%
Percent Moisture	SM	2540	1.0	1.0	%
Grain Size Analysis	ASTM	D-6913	N/A	N/A	%
Hydrometer Analysis	ASTM	D7928	N/A	N/A	%
Metals					
Arsenic	SW 846	6020A	0.4	0.4	ppm
Cadmium	SW 846	6020A	0.07	0.07	ppm
Chromium	SW 846	6020A	0.5	0.5	ppm
Copper	SW 846	6020A	0.5	0.5	ppm
Lead	SW 846	6020A	0.5	0.5	ppm
Mercury	SW 846	7474/7471B	0.02	0.02	ppm
Nickel	SW 846	6020A	0.5	0.5	ppm
Zinc	SW 846	6020A	1.0	1.0	ppm

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Table B-3 Sediment Methods, Reporting Limits, and Project Required Detection Limits

Parameter	Method Reference	Method Number	Lab MRL	Project Required RL	RL Units
PAHs					
Acenaphthene	SW-846	8270DSIM	0.01	0.01	ppm
Acenaphthylene	SW-846	8270DSIM	0.01	0.01	ppm
Anthracene	SW-846	8270D-SIM	0.01	0.01	ppm
Benzo(a)anthracene	SW-846	8270DSIM	0.01	0.01	ppm
Benzo(a)pyrene	SW-846	8270DSIM	0.01	0.01	ppm
Benzo(b)fluoranthene	SW-846	8270D-SIM	0.01	0.01	ppm
Benzo(k)fluoranthene	SW-846	8270D-SIM	0.01	0.01	ppm
Benzo(g,h,i)perylene	SW-846	8270D-SIM	0.01	0.01	ppm
Chrysene	SW-846	8270D-SIM	0.01	0.01	ppm
Dibenz(a,h)anthracene	SW-846	8270DSIM	0.01	0.01	ppm
Fluoranthene	SW-846	8270D-SIM	0.01	0.01	ppm
Fluorene	SW-846	8270D-SIM	0.01	0.01	ppm
Indeno(1,2,3-cd)pyrene	SW-846	8270D-SIM	0.01	0.01	ppm
Naphthalene	SW-846	8270D-SIM	0.01	0.01	ppm
Phenanthrene	SW-846	8270D-SIM	0.01	0.01	ppm
Pyrene	SW-846	8270D-SIM	0.01	0.01	ppm
Pesticides					
Aldrin	SW-846	8081B	0.001	0.001	ppm
Chlordane – Alpha	SW-846	8081B	0.001	0.001	ppm
Chlordane – gamma	SW-846	8081B	0.001	0.001	ppm
Chlordane – oxy	SW-846	8081B	0.001	0.001	ppm
4,4' – DDT	SW-846	8081B	0.001	0.001	ppm
4,4' – DDD	SW-846	8081B	0.001	0.001	ppm
4,4' – DDE	SW-846	8081B	0.001	0.001	ppm
Dieldrin	SW-846	8081B	0.001	0.001	ppm
Endosulfan alpha and beta	SW-846	8081B	0.001	0.001	ppm
Endrin	SW-846	8081B	0.001	0.001	ppm
Heptachlor and derivative (epoxide)	SW-846	8081B	0.001	0.001	ppm
Hexachlorocyclohexane (lindane)	SW-846	8081B	0.001	0.001	ppm
Methoxychlor	SW-846	8081B	0.001	0.001	ppm
Toxaphene	SW-846	8081B	0.025	0.025	ppm
trans and cis Nonachlor	SW-846	8081B	0.001	0.001	ppm
Hexachlorobenzene	SW-846	8081B	0.001	0.001	ppm

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Table B-3 Sediment Methods, Reporting Limits, and Project Required Detection Limits

Parameter	Method Reference	Method Number	Lab MRL	Project Required RL	RL Units
PCBs					
Congener analysis	SW-846	8082/8270 SIM	0.001	0.001	ppm
TOC	SW-846	9060	0.01	0.1	%

Table B-4 Aqueous Methods, Reporting Limits, and Project-Required Detection Limits (Surface Water, Elutriates, and Blank Samples)

Parameter	Method Reference	Method Number	Lab MRL	Project Required RL	RL Units
Metals¹					
Arsenic	SW-846	6020	1	1	ppb
Cadmium	SW-846	6020	1	1	ppb
Chromium	SW-846	6020	1	1	ppb
Hexavalent chromium	SW-846	7196	1	1	ppb
Copper	SW-846	6020	0.6	0.6	ppb
Lead	SW-846	6020	1	1	ppb
Mercury	SW-846	7470A	0.4	0.4	ppb
Nickel	SW-846	6020	1	1	ppb
Selenium	SW-846	6020	1	1	ppb
Silver	SW-846	6020	0.05	0.5	ppb
Zinc	SW-846	6020	1	1	ppb
PAHs²					
Acenaphthene	SW-846	8270D	10	10	ppb
Acenaphthylene	SW-846	8270D	10	10	ppb
Anthracene	SW-846	8270D	10	10	ppb
Benzo(a)anthracene	SW-846	8270D	10	10	ppb
Benzo(a)pyrene	SW-846	8270D	10	10	ppb
Benzo(b)fluoranthene	SW-846	8270D	10	10	ppb
Benzo(k)fluoranthene	SW-846	8270D	10	10	ppb
Benzo(g,h,i)perylene	SW-846	8270D	10	10	ppb
Chrysene	SW-846	8270D	10	10	ppb
Dibenz(a,h)anthracene	SW-846	8270D	10	10	ppb
Fluoranthene	SW-846	8270D	10	10	ppb
Fluorene	SW-846	8270D	10	10	ppb
Indeno(1,2,3-cd)pyrene	SW-846	8270D	10	10	ppb
Naphthalene	SW-846	8270D	10	10	ppb

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Table B-4 Aqueous Methods, Reporting Limits, and Project-Required Detection Limits (Surface Water, Elutriates, and Blank Samples)

Parameter	Method Reference	Method Number	Lab MRL	Project Required RL	RL Units
Phenanthrene	SW-846	8270D	10	10	ppb
Pyrene	SW-846	8270D	10	10	ppb
Semi-volatile compounds					
Pentachlorophenol	SW-846	8270D	2	2.60	ppb
Pesticides					
Aldrin	SW-846	8081B	0.26	0.26	ppb
Chlordane (alpha/gamma/oxy)	SW-846	8081B	0.02	0.02	ppb
Chlorpyrifos	SW-846	8081B	0.002	0.002	ppb
4,4'-DDT	SW-846	8081B	0.03	0.03	ppb
Dieldrin	SW-846	8081B	0.014	0.14	ppb
Endosulfan and derivatives (I, II)	SW-846	8081B	0.007	0.007	ppb
Endrin	SW-846	8081B	0.0007	0.007	ppb
Heptachlor & derivative (epoxide)	SW-846	8081B	0.01	0.01	ppb
Hexachlorocyclohexane (lindane)	SW-846	8081B	0.26	0.26	ppb
Toxaphene	SW-846	8081B	0.04	0.04	ppb
PCBs					
Congener analysis	SW-846	8082	0.006	0.006	ppb
Pentachlorophenol ³	SW-846	8270D	2.6	2.6	ppb

¹ Metals samples will be extracted from seawater matrix and preconcentrated before analysis.

² Aqueous PAHs will be only be analyzed in the grab sampler equipment blank.

³ Pentachlorophenol will not be analyzed in the grab sampler equipment blank.

Table B-5 Tissue Methods, Reporting Limits, and Project-Required Detection Limits

Parameter	Method Reference	Method Number	Laboratory RL	Project Required RL	RL Units
Percent Moisture	SM 2540	SM 2540	0.1	0.1	%
Total lipids	NOAA 130, 1998	NOAA Tech Memo NOS ORCA 130, 1998	0.1	0.1	%
PCBs (wet wt.)					
PCB Congeners	SW-846	8082	0.5	0.5	ppb
Metals (wet wt.)					
Arsenic	EPA OW	6020	0.5	0.5	ppm
Cadmium	EPA OW	6020	0.1	0.1	ppm

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Table B-5 Tissue Methods, Reporting Limits, and Project-Required Detection Limits

Parameter	Method Reference	Method Number	Laboratory RL	Project Required RL	RL Units
Chromium	EPA OW	6020	1.0	1.0	ppm
Copper	EPA OW	6020	1.0	1.0	ppm
Lead	EPA OW	6020	1.0	1.0	ppm
Mercury	SW-846	7474	0.02	0.02	ppm
Nickel	EPA OW	6020	1.0	1.0	ppm
Zinc	EPA OW	6020	1.0	1.0	ppm
PAHs (wet wt.)					
Acenaphthene	SW-846	8270DIM	0.01	0.02	ppm
Acenaphthylene	SW-846	8270DSIM	0.01	0.02	ppm
Anthracene	SW-846	8270DSIM	0.01	0.02	ppm
Benzo(a)anthracene	SW-846	8270DSIM	0.01	0.02	ppm
Benzo(a)pyrene	SW-846	8270DIM	0.01	0.02	ppm
Benzo(b)fluoranthene	SW-846	8270D-SIM	0.01	0.02	ppm
Benzo(k)fluoranthene	SW-846	8270DSIM	0.01	0.02	ppm
Benzo(g,h,i)perylene	SW-846	8270D-SIM	0.01	0.02	ppm
Dibenz(a,h)anthracene	SW-846	8270D-SIM	0.01	0.02	ppm
Chrysene	SW-846	8270DIM	0.01	0.02	ppm
Fluoranthene	SW-846	8270DSIM	0.01	0.02	ppm
Fluorene	SW-846	8270DSIM	0.01	0.02	ppm
Indeno(1,2,3-cd)pyrene	SW-846	8270DSIM	0.01	0.02	ppm
Naphthalene	SW-846	8270DSIM	0.01	0.02	ppm
Phenanthrene	SW-846	8270DSIM	0.01	0.02	ppm
Pyrene	SW-846	8270DSIM	0.01	0.02	ppm
Pesticides (wet wt.)					
Aldrin	SW-846	8081B	0.001	0.001	ppm
Chlordane – Alpha	SW-846	8081B	0.001	0.001	ppm
Chlordane – gamma	SW-846	8081B	0.001	0.001	ppm
Chlordane – oxy	SW-846	8081B	0.001	0.001	ppm
4,4' – DDT	SW-846	8081B	0.001	0.001	ppm
4,4' – DDD	SW-846	8081B	0.001	0.001	ppm
4,4' – DDE	SW-846	8081B	0.001	0.001	ppm
Dieldrin	SW-846	8081B	0.001	0.001	ppm
Endosulfan & derivatives (I, II)	SW-846	8081B	0.001	0.001	ppm
Endrin	SW-846	8081B	0.001	0.001	ppm
Cis-Nonachlor	SW-846	8081B	0.001	0.001	ppm
Heptachlor & derivative (epoxide)	SW-846	8081B	0.001	0.001	ppm

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Table B-5 Tissue Methods, Reporting Limits, and Project-Required Detection Limits

Parameter	Method Reference	Method Number	Laboratory RL	Project Required RL	RL Units
Trans-Nonachlor	SW-846	8081B	0.001	0.001	ppm
Hexachlorocyclohexane (lindane)	SW-846	8081B	0.001	0.001	ppm
Methoxychlor	SW-846	8081B	0.001	0.001	ppm
Toxaphene	SW-846	8081B	0.05	0.05	ppm
Hexachlorobenzene	SW-846	8081B	0.001	0.001	ppm
¹ RL – Reporting limit. Listed laboratory RLs correspond to clam and worm species. RLs for plant tissues will be higher by a factor of five. LL – Low Level					

For this task, systematic checks have been included to ensure data quality. MQOs corresponding to the QC samples are detailed in **Table B-6** (Physical/Chemistry) and **Table B-7** (Bioassays) to ensure that the Data Quality Indicators (DQIs) support the task data usability quality requirements. Quantitative laboratory DQIs for accuracy are supported through the analysis of QC samples as method blanks, matrix spikes, standard reference materials, and in the case of bioassays, through the use of reference toxicants and the monitoring of controls (control survival).

DQIs for precision are supported with the analysis of QC sample spike and/or laboratory duplicates. Field blanks and in some cases field duplicates can also provide important indications of data quality and field blanks have been included in this task (refer to FSP). Completeness of targeted field and laboratory scopes is another important indicator of overall usability/quality.

Qualitative DQIs addressing representativeness and comparability will be assured to some degree through the high number of stations to be sampled, and the subsequent formation of composite samples. The specified use of RIM specified methods will also assure comparability of the dataset to historical data sets generated for similar purposes.

The MQOs established for the quantitative DQIs have been defined below for this task.

Precision

Precision is a measure of the degree to which two or more measurements are in agreement. Laboratory precision will be assessed through the calculation of Relative Percent Difference (RPD) for laboratory duplicate samples, either as matrix spike/ matrix spike duplicates (MS/MSDs) or as laboratory duplicates. Laboratory precision control limits are provided in **Table B-6**. Specific formulas/equations supporting these and other DQIs are provided in Section B.8 *Data Reduction/ Calculation of Data Quality Indicators*.

Accuracy

Accuracy is the degree of agreement between the observed value and an accepted reference or true value. Field accuracy will be assessed through the use of equipment rinse blanks and through the adherence to all sample handling, preservation, and holding time requirements. Laboratory accuracy will be assessed through the analysis of MS/MSDs, standard reference materials, laboratory control samples (LCSs), and surrogate compounds, and the subsequent determination of percent recoveries (%Rs). Accuracy control limits are provided in **Table B-6**.

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Table B-6 Measurement Quality Objectives for Physical and Analytical Measurements

QC Sample	Units	GS	TOC	Pentachlorophenol	Metals	PCBs	Pest	PAHs	Corrective Action
Sediment Material									
Method Blank	Conc	-	< RL	-	<RL	<RL	<RL	<RL	1
Surrogate Spikes	% Rec	-	-	-	-	30-150	30-150	30-150	2
Matrix Duplicate	% RPD	25	30	-	20	30	30	30	3
Matrix Spike	% Rec	-	-	-	75-125	50-120	50-120	50-120	4
MSD	% RPD	-	-	-	-	30	30	30	5
SRM	% Rec	-	75-125	-	w/in limits	40-140	40-140	40-140	6
Aqueous Material									
Method Blank	Conc	-	-	<RL	<RL	<RL	<RL	<RL	1
Surrogate Spikes	% Rec	-	-	30-150	-	30-150	30-150	30-150	2
Matrix Duplicate	% RPD	-	-	-	-	-	-	-	3
Matrix Spike	% Rec	-	-	50-120	80-120	50-120	50-120	50-120	4
MSD	% RPD	-	-	30	-	30	30	30	5
LCS	% Rec	-	-	50-120	80-120	50-120	50-120	50-120	6
Tissue Material									
Method Blank	Conc	-	-	-	<RL	<RL	<RL	<RL	1
Surrogate Spikes	% Rec	-	-	-	-	30-150	30-150	30-150	2
Matrix Duplicate	% RPD	-	-	-	30	30	30	30	3
Matrix Spike	% Rec	-	-	-	75-125	50-120	50-120	50-120	4
MSD	% RPD	-	-	-	-	30	30	30	5
LCS	% Rec	-	-	-	w/in limits	40-140	40-140	40-140	6

^aQC samples analyzed at a frequency of one per batch of 20 or fewer samples, except surrogates are added to each sample.

Corrective Action Codes:

- 1 Flag results if <5x blank concentration, re-extract or reanalyze the entire batch.
- 2 Re-extract sample, re-analyze sample or document and narrate
- 3 Flag results
- 4 Flag results
- 5 Investigate, re-analyze or flag results
- 6 Re-extract/reanalyze entire batch if all analytes are outside limits; if selected analytes affected, investigate and provide narrative.

Data Qualifiers:

- J: Analyte detected < laboratory achieved detection limit (i.e., ssRL for organics and RL for metals) but above MDL.
E: Estimate, result > highest concentration level in the calibration.

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B: Analyte concentration is <5x the level found in the procedural blank (the qualifier is only applied to the affected field samples).

U: Not detected above laboratory achieved reporting detection limit

Q: QC value outside the accuracy or precision criteria goal.

Table B-7 Bioassay Measurement Quality Objectives

QC Parameter	Measure or Acceptance Criteria	Corrective Action
SPP Toxicity Testing	<i>Menidia menidia</i> : ≥90% control survival <i>Americamysis bahia</i> : ≥90% control survival <i>Arbacia punctulata</i> : ≥70% control survival	Re-run Test
10-Day Whole Sediment Acute Testing	<i>Leptocheirus plumulosus</i> : control ≥90% mean survival in control <i>Americamysis bahia</i> : ≥90% mean survival in control	Re-run Test
Bioaccumulation	<i>Macoma nasuta</i> and <i>Nereis virens</i> bioaccumulation	Re-run Test
Reference Toxicity Tests (10-day and SPP)	≥90% mean survival in control (and within control chart limits)	Repeat entire test series

Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. "Normal conditions" are defined as the conditions expected if the sampling plan was implemented as planned.

- Field completeness is a measure of the amount of valid samples obtained during all sampling for the project. The field completeness objective is greater than 95%.
- Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. The laboratory completeness objective is greater than 95%.

All analytical data that do not meet the listed MQOs will be submitted to the appropriate AECOM Laboratory Coordinator for review and assessment of the potential impact of the results. Affected samples may be reanalyzed at the discretion of the AECOM Task Order Manager. Data accepted outside these criteria will be flagged with the appropriate data qualifier (**Table B-6** and **Table B-7**), and the rationale for accepting results will be thoroughly documented.

B.4 Sample Receipt, Handling, Custody, and Holding Time Requirements

B.4.1 Sample Receipt Condition Verification/Documentation

Upon sample receipt at the respective laboratories, the condition of samples and associated packaging will be evaluated and documented on a sample receipt form (Attachment 4). As noted on the form, temperature, container condition, unique or unusual sample observations, labeling discrepancies, preservation status, COC completeness, etc. will be documented and a copy sent to the appropriate AECOM Laboratory Coordinator without delay.

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When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the COC form (Attachment 3). This record documents the transfer of custody of samples from the sampler to another person, to the permanent laboratory, or to/from a secure storage location.

B.4.2 Corrective Action for Incoming Samples

Corrective actions may in some cases be taken on incoming samples that do not meet storage requirements. All actions are to be discussed with the Task Order Manager, and may include re-containerizing samples when containers are cracked, etc.

Corrective actions will be documented in the project file. Documentation will include:

- A description of the circumstances that initiated the corrective action;
- The action taken in response;
- The final resolution; and
- Any necessary approvals.

No person will initiate corrective action without prior communication of findings through the proper channels.

B.5 Sample Preparation for Physical, Chemical, & Biological Tests (Task 4)

Station homogenates will be prepared initially in the field by mixing the sediment within each bucket with large pre-cleaned stainless steel spoons as additional core material is added. In this way, the discrete subsamples collected for grain size and chemical archive will represent the station samples.

Stations will be re-homogenized at the bioassay laboratory (ESI) before sample pooling commences by mixing the full volume collected from each station in a large 40-L HDPE plastic bin. These same bins will be used to mix the station composites, one bin per composite for storage between subsampling for the Elutriate/SPP samples, the 10-day bioassay, and the 28-day bioassay.

Composites will be prepared by mixing **equal volumes** from each station to form the final composite sample (see **Table A-1** for compositing scheme). Sample container and storage requirements for the range of potential measurements are detailed on **Table A-7** and Attachment 5.

Tools used in sample transfer and mixing will be either stainless steel or Teflon pre-cleaned using the Level III decontamination procedure detailed in SOP NHH-G-03 (Appendix A). Composite labeling will be as specified in **Table A-1** and **Table A-2**. Materials will be retained (refrigerated) until NAE accepts/approves the final project report.

B.6 Analytical Procedures—Physical & Chemical Parameters (Task 5, 6, 7, & 11)

B.6.1 Sediment Procedures (Tasks 5 & 6)

Sediment physical and chemical parameters will be analyzed by two NAE approved laboratories, Alpha and ESI. The laboratory QAPP for Alpha was submitted to and approved by NAE. Periodic updates have been submitted to NAE, most recently in April 2017. The laboratory QAPP for ESI was submitted to and approved by NAE. Periodic updates have been submitted to NAE, most recently in April 2016.

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Initially, discrete samples collected from the 26 individual sampling stations will be wet sieved by Alpha to determine gravel, sand, silt and clay (#4, 10, 40 and 200 sieves) on a fast (24-hour) turnaround time.

Following NAE's data review/approval and composite preparation, bulk sediment samples will be analyzed by sieve-hydrometer (Task 5; Alpha) and sediment chemical methods (Task 6; Alpha). **Table B-3** details the methods and Reporting Limits (RLs) established as DQOs (equivalent to RIM requirements) to meet project objectives.

Grain size analysis (with hydrometer) of the harbor composites and reference site sample shall be conducted according to the methods described in ASTM D422 and Alpha SOP 2183 (Revision 8, June 2017) Particle Size Analysis of Soils-With/Without Hydrometer and reported as percentages retained by weight in the following size classes at a minimum:

- Cobble (3" sieve)
- Gravel (no. 4 sieve)
- Coarse Sand (no. 10 sieve)
- Medium Sand (no. 40 sieve)
- Fine Sand (no. 200 sieve)
- Fine Grained Material (passing the no. 200 sieve)

Results will be reported on a dry-weight basis, and will include distribution curves. QC results will be reported on NAE's QC Summary Tables (Appendix B).

Total Organic Carbon (TOC) will be analyzed as detailed in Alpha SOP 17452 Total Organic Carbon and Soot in Soil, Sediment (Revision 1, July 2015). All samples will be analyzed in duplicate. Results will be reported on a dry-weight basis.

Trace Organic Parameters as PAHs, PCB Congeners and pesticides will be analyzed following Alpha SOPs 2157, Analysis of Polynuclear Aromatic Hydrocarbons and PCB Congeners by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (Revision 13, May 2016) and 2158, Determination of Organochlorine Pesticides By Gas Chromatography/Electron Capture Detection (GC/ECD) (Revision 13, June 2017). Samples are extracted three times using appropriate solvent. Extracts are combined, dried over sodium sulfate, and evaporatively concentrated. Concentrated extracts may require cleanup before analysis. Cleanup procedures may include copper, silica gel, florisil, sulfuric acid or other appropriate cleanup techniques. Target compound identification will be based on dual-column analysis for GC analyses or reference mass spectral identification for GC-MS analyses.

Quantitation will be based on response factors determined from an initial 5 point calibration using external standards for GC analyses and internal standards for GC-MS analyses.

All results will be reported in microgram per kilogram ($\mu\text{g/kg}$) dry weight.

Metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc) will be analyzed following procedures in Alpha SOP 2137, Inductively Coupled Plasma-Mass Spectrometry (Revision 13, April 2016). Sample preparation will be conducted according to the SOP. An aliquot of digestate will be nebulized into a spray chamber where a stream of argon carries the sample aerosol through a quartz torch and injects it into the radio frequency inductively coupled plasma. The ions produced in the plasma are introduced to the mass spectrometer for quantification against a single point initial calibration. All results are reported in milligrams per kilogram (mg/kg) dry weight.

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Mercury will be analyzed following procedures in Alpha SOP2143, Mercury Determination in Tissue and Soil/Sediment Samples by Cold Vapor Atomic Fluorescence Technique (CVAf) (Revision 8, July 2015) Sediment samples (approximately 1 g) will be digested by hot plate in an aqua regia acid solution. An aliquot of the digest will then be prepared with HCL/BrCl and hydroxylamine hydrochloride solution. Mercury in the digested sample is reduced to elemental mercury, aerated from solution and introduced into the spectrophotometer. The emission is measured and compared to a multi-level initial calibration for quantification. All results will be reported in mg/kg dry weight.

B.6.2 Elutriate/ SPP Preparation & Aqueous Analytical Procedures (Task 7)

The preparation of elutriate and SPP samples will utilize the sediment composites prepared under Task 4 detailed above. Elutriate and other (i.e., equipment blanks, CLDS Reference Site water) aqueous samples will be analyzed for trace metals, PAHs (equipment blank only), PCBs/pesticides and pentachlorophenol (not in CLDS water equipment blank). The samples will be prepared in glass containers. The elutriate/ SPP preparation must commence no later than 14 days after seawater collection. Elutriate and SPP samples will be prepared concurrently and used within 24 hours of preparation.

The elutriate/SPP samples are prepared by placing one volume of test sediment and four volumes of dredging site water (i.e. harbor water) from the appropriate site in an eight-gallon glass container and mixing vigorously with a magnetic stir bar. Additionally, the sediment/water mixture will be hand stirred at approximately 10 minute intervals during the mixing period. At the end of the 30-minute period, the sediment/water mixture will be allowed to settle for one hour and the supernatant (elutriate/SPP) siphoned off for testing. Sufficient sediment and seawater volumes are used to prepare samples for chemical analysis of the elutriate and SPP bioassays. If required, the SPP portion may be centrifuged (only enough to clear the water so organisms can be seen) to facilitate biological observations.

The elutriate samples will be prepared in **triplicate** for the analyses of PCBs/pesticides, pentachlorophenol, and trace metals. Elutriate samples will be centrifuged at ESI, split for metals and organic analysis, and then containerized per **Table A-7** and Attachment 5 requirements. Elutriate blanks are defined for this project as the site water (used to prepare elutriates) that are run through the entire elutriate preparation process for background correction purposes.

Table B-4 details the list of target elutriate analytes, corresponding analytical method references, and target detection limits for the aqueous project samples.

Trace Organic Parameter elutriate and elutriate blank samples will be centrifuged at ESI and analyzed at ESI. Rinsate blank samples will be transferred to ESI directly from the field. PAH (sediment equipment blank), pentachlorophenol, PCB Congeners and pesticides will be analyzed following the ESI SOPs 1345 (Revision 3, March 2012) Analysis of ABN Compounds by GC/MS, 1351 (Revision 9, March 2016) Analysis of Pesticides and PCBs in Extracts of Soil, Tissue and Water and 1391 (Revision 1, May 2013) Analysis of Selected PCB Congeners by GC/MS. Water samples will be extracted according to ESI SOPs 1367 (Revision 3, March 2013) Extraction of Pentachlorophenol and Other ABN Compounds in Aqueous Samples and 1344 (Revision 9, April 2014) Extraction of Pesticides and PCBs in Aqueous Samples.

Samples are extracted three times using appropriate solvent. Extracts are combined, dried over sodium sulfate, and evaporatively concentrated. Concentrated extracts may require cleanup before analysis. Cleanup procedures may include copper, silica gel, florisil, sulfuric acid or other appropriate cleanup techniques.

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Target compound identification will be based on dual- column analysis for GC analyses or reference mass spectral identification for GC-MS analyses.

Quantitation will be based on response factors determined from an initial 5 point calibration using external standards for GC analyses and internal standards for GC-MS analyses.

All results will be reported in microgram per liter (µg/L) units.

Metals elutriate and elutriate blank samples will be prepared and analyzed at ESI. The reference site water samples will be transferred to ESI directly from the field. Elutriate and elutriate blank samples will be analyzed for ten metals: arsenic, cadmium, hexavalent chromium, copper, nickel, lead, silver, selenium, zinc, and mercury.

Mercury will be analyzed following procedures in ESI SOP 1365 (Revision 5, June 2012), Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry. Water samples will be digested with a BrCl solution followed by reduction with a hydroxylamine hydrochloride solution. Mercury in the digested sample will be reduced to elemental mercury, aerated from solution and introduced into the fluorescence detector. The emission will be measured and compared to a multi level initial calibration for quantification.

Arsenic, cadmium, copper, nickel, lead, selenium, silver, and zinc will be extracted from seawater according to ESI SOP1323 (Revision 8, January 2015) Sample Preparation; Trace Metals Digestion and analyzed according to ESI SOP1369 (Revision 9, June 2016) Determination of Trace Metals by ICP-MS Analysis.

Hexavalent chromium will be analyzed according to ESI SOP 1353 (Revision 12, July 2015) Hexavalent Chromium.

All metals results will be reported in mg/L units.

B.6.3 Tissue Analytical Procedures (Task 11)

Although the 28-day bioaccumulation testing will be performed on all composite group sediment samples, chemical analyses will only be performed on tissue samples for those sediments that pass the 10-day whole sediment acute toxicity test. **Table B-5** lists the potential parameters that may be analyzed in the bioaccumulative tissue samples. If selected parameters are not detected in selected sediment composites, then those parameters may be omitted from tissue testing with NAE approval.

Trace organic tissue parameters as PAHs, PCB Congeners and Pesticides will be analyzed after preparation following Alpha SOPs 2157 (Revision13, May 2016) Analysis of Polynuclear Aromatic Hydrocarbons and PCB Congeners by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring and 2158, Determination of Organochlorine Pesticides By Gas Chromatography/Electron Capture Detection (GC/ECD) (Revision 13, June 2017). Samples are extracted three times using appropriate solvent. Extracts are combined, dried over sodium sulfate, and evaporatively concentrated. Concentrated extracts may require cleanup before analysis. Cleanup procedures may include copper, silica gel, florisil, sulfuric acid or other appropriate cleanup techniques.

Target compound identification will be based on dual- column analysis for GC analyses or reference mass spectral identification for GC-MS analyses.

Quantitation will be based on response factors determined from an initial 5 point calibration using external standards for GC analyses and internal standards for GC-MS analyses.

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All tissue results will be reported in nanograms per gram (ng/g) on a wet weight basis.

Lipid Content in tissue samples will be determined according to NOAA Tech Memo 130, 1998. An aliquot of tissue is weighed in a tared glass vial and the lipid content of the sample is extracted using a specific ratio of solvent to water. The sample is serially extracted three times. The organic layer is removed and dried over sodium sulfate. The extract is evaporated to dryness, leaving the lipid content. Amount of residue is determined gravimetrically.

The results will be reported in % wet tissue.

Metals tissue samples will be processed according to Alpha SOP 2137 (Revision 13, April 2016) Inductively Coupled Plasma-Mass Spectrometry.

For metals other than mercury, an aliquot of the digestate will be analyzed following procedures in Alpha SOP 2137. By this procedure, the digestion solution is nebulized into a spray chamber where a stream of argon carries the sample aerosol through a quartz torch and injects it into the radio frequency inductively coupled plasma. The ions produced in the plasma will be introduced to the mass spectrometer for quantification against a single point initial calibration.

Mercury will be analyzed following procedures in Alpha SOP 2143 (Revision 8, July 2015) Mercury Determination in Tissue and Soil/Sediment Samples by Cold Vapor Atomic Fluorescence Technique. An aliquot of the digest is prepared with HCL/BrCl and hydroxylamine hydrochloride solution. Mercury in the digested sample will be reduced to elemental mercury, aerated from solution and introduced into the fluorescence detector. The fluorescence will be measured and compared to a multi-level initial calibration for quantification.

All metals results will be reported in micrograms per gram (µg/g) on a wet weight basis.

B.6.4 Preventive Maintenance

Routine testing and preventive maintenance is performed by the laboratory as part of their QA program. Details on the type of checks, frequencies, and corrective actions associated with the physical and chemical project measurements are included in the corresponding laboratory QA manuals.

B.6.5 Calibration Procedures & Frequency

Specific laboratory method calibration procedures and frequency requirements are detailed in NAE QC summary tables, referenced in the RIM (EPA/ USACE, 2004) and included in Appendix B.

Calibration procedures for laboratory instruments will consist of initial calibrations, initial calibration verifications, and continuing calibration verification. The SOP for each analysis performed in the laboratory describes the calibration procedures, their frequency, acceptance criteria, and the conditions that will require recalibration. This information is summarized in the laboratory QA Manuals.

The laboratory maintains documentation for each instrument which includes the following information: instrument identification, serial number, date of calibration, analyst, calibration solutions, and the samples associated with these calibrations.

Inspection/ Acceptance of Supplies and Consumables

The laboratory system of inspection and acceptance of supplies and consumable is documented in the laboratory QA Manuals.

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Supplies and consumables not meeting acceptance criteria will initiate the appropriate corrective action. Corrective measures may include repair or replacement of measurement equipment, and/or notification of vendor and subsequent replacement of defective or inappropriate materials. All actions will be documented in the project files.

B.6.6 Laboratory QC Procedures

Each batch of sediment samples analyzed for TOC, organics and metals will be prepared with a routine set of QC samples. For TOC, all samples will be analyzed in duplicate and QC samples will also include one method blank and one standard reference material. For organics, QC samples will include one matrix spike, one matrix spike duplicate, one sample duplicate, and one sediment standard reference material sample. Metals will include one matrix spike, one sample duplicate, and one standard reference material sample.

Each batch of twenty aqueous samples analyzed for organic contaminants and metals will be prepared with a set of QC samples as specified in the RIM. For organic contaminant analysis, QC samples will include one method blank, one laboratory control sample, one matrix spike, and one matrix spike duplicate. For metals analyses, QC samples will include one method blank, one laboratory control sample, one matrix spike and one matrix spike duplicate.

Each batch of twenty or fewer tissue samples analyzed for organic contaminants (PCB/ pesticides and PAHs) and metals will be prepared with a routine set of QC samples, including one method blank, one laboratory control sample, one matrix spike, one matrix spike duplicate, one sample duplicate, and one tissue standard reference material sample. For lipid content analysis, one sample duplicate will be prepared with each batch of tissue samples.

Physical and chemical measurement quality objectives (MQOs) for sediment, elutriate, and tissue sample types are provided in **Table B-6**.

B.6.7 Performance and System Audits

Sediment and tissue analytical programs include SRMs, providing an excellent way to audit the performance of laboratory procedures for sample preparation and analysis. Field and/or laboratory system audits may be performed at the discretion of the NAE TM to ensure project personnel are performing project related tasks according to the project specific SAP and associated field and laboratory SOPs.

Field Audit

As detailed in Section A.9 of the FSP, the AECOM Field Services Task Leader will be responsible for ensuring that the approved procedures documented in the SAP and QAPP are being followed. The Task Leader will review field sampling records, field measurement results, and field instrument operating and calibration records. The Field Services Task Leader will also be responsible for monitoring procedures for sample collection, handling, and packaging procedures, QA procedures, chain-of-custody, and sample documentation, etc.

If significant deficiencies are noted, corrective action will be implemented as discussed in Section B.6.8.

Laboratory Audit

Laboratory audits are conducted periodically by AECOM as part of their analytical subcontractor monitoring program. A typical systems audit includes review of the following areas:

- QA organization and procedures,

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- Personnel training and qualifications,
- Sample log-in procedures,
- Sample storage facilities,
- Analyst technique
- Adherence to laboratory SOPs and project SAP,
- Compliance with QA/QC objectives,
- Instrument calibration and maintenance,
- Data recording, reduction, review, and reporting, and
- Cleanliness and housekeeping.

Preliminary results of the audit are discussed with the Laboratory Manager, Laboratory Project Manager, and Laboratory QA Coordinator. A written report that summarizes audit findings and recommends corrective actions is prepared and submitted to the Laboratory Manager for response, and to the AECOM Project Manager.

Data Package Audits

Audits of analytical data packages will be conducted for 100% of the packages received as part of the data validation process (Section B.11). The review will include an evaluation of the package to ensure that (1) all required deliverables are provided, (2) the package contains the information necessary to reproduce the reported results, and (3) the QC acceptance criteria specified in the SAP were met. Any deficiencies will be communicated to the laboratory and documented in the project files.

Audit Samples

Audit samples will be incorporated into the program as discussed in the Laboratory QC Procedures section above. Results for the audit/SRM samples will be reviewed by the Physical & Chemistry Laboratory Coordinator and compared to the acceptable limits provided by the vendor. Failure to meet the acceptance criteria will result in the review of the results and supporting data by the laboratory to identify the cause of the failure. Depending on the outcome of this review, subsequent corrective actions may include the following:

- Qualification/flagging of affected data,
- Discarding affected data and re-analysis, or
- Discarding affected data, re-sampling, and re-analysis.

B.6.8 Nonconformance & Corrective Actions

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter SAP specification nonconformance, unacceptable procedures, or out-of-limit QC performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. All corrective action proposed and implemented will be documented as detailed in Section 13 Reports.

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Corrective action should only be implemented after approval by the AECOM Task Order Manager, or her designee. Field related corrective action is discussed in Section A.10 of the FSP.

Laboratory Corrective Action

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, multiple phases, low/high pH readings, and potentially high concentration samples may be identified during sample log-in or analysis. Following consultation with laboratory analysts and supervisory personnel, it may be necessary for the Laboratory QA Coordinator to approve the implementation of corrective action. If the nonconformance causes project objectives not to be achieved, the AECOM Task Order Manager will be notified.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and in the narrative data report sent from the laboratory to the AECOM (Chemical or Biological) Laboratory Coordinator and the AECOM Task Order Manager. If the corrective action does not rectify the situation, the laboratory will contact the AECOM Task Order Manager who, in concert with the AECOM (Chemical or Biological) Laboratory Coordinator and NAE's TM, will determine the action to be taken and inform the appropriate personnel.

Physical & Chemical Measurements

The need for corrective action may be identified during either data validation or data assessment. Potential types of corrective action may include resampling by the field team or reinjection/reanalysis of samples by the laboratory. These actions are dependent upon the ability to mobilize the field team and whether the data to be collected is necessary to meet the required QA objectives. If the AECOM Laboratory identifies a corrective action situation, the AECOM Task Order Manager will be responsible for informing the appropriate personnel.

B.6.9 Corrective Action Reports to Management

QA reports will be submitted to the AECOM Task Order Manager to ensure that any problems identified during the sampling and analysis programs are investigated and the proper corrective measures taken in response. The QA reports will include:

- All results of field and laboratory audits,
- Problems noted during data validation and assessment, and
- Significant QA/QC problems, recommended corrective actions, and the outcome of corrective actions.

QA reports will be prepared by the AECOM Project QA Officer and submitted on an as-needed basis.

B.7 Analytical Procedures – Bioassays (Tasks 8, 9, & 10)

All toxicity testing will be conducted following protocol guidance presented in NAE's RIM (EPA/USACE, 2004) and in the Inland Testing Manual (EPA/USACE, 1998).

B.7.1 SPP Bioassays (Task 8)

SPP toxicity tests will commence no later than 24 hours after the SPP is prepared. SPP from each of the six composites will be tested at 100%, 50%, 10%, and 0% concentrations, using the CLDS Reference Site water as the dilution water. Three species, *M. menidia*, *A. bahia*, and *A. punctulata*, will be exposed to the

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SPP dilution series, reference site water, as well as a clean seawater control (i.e., laboratory control). All SPP tests will be conducted static, with aeration provided if dissolved oxygen falls below 40% saturation (~4 mg/L at 20°C and 30 parts-per-thousand). The *M. menidia* and *A. bahia* tests are 96-hour duration; the *A. punctulata* larval development test is 48-72-hour duration. A reference toxicant test of the same duration, using potassium chloride or copper in clean seawater, will be performed concurrently with each SPP test. Specific test conditions for the SPP tests are provided in **Table B-8**.

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Table B-8 Suspended Particulate Phase Testing Conditions

Parameter	Americamysis bahia	Menidia menidia	Arabacia punctulata
Treatments (SPP prepared from sediment composites and harbor water)*	8 Sample Composites and 1 CLDS Reference Site water	8 Sample Composites and 1 CLDS Reference Site water	8 Sample Composites and 1 CLDS Reference Site water
Replicates	5	5	5
Test population	1-5 days old	7-10 day with 24 hours variation	2 hours after fertilization
Temperature	Mean of $20 \pm 1^{\circ}\text{C}$ Maximum Deviation of 3°C	Mean of $20 \pm 1^{\circ}\text{C}$ Maximum Deviation of 3°C	Mean of $20 \pm 1^{\circ}\text{C}$ Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation	NA
pH	NA	NA	NA
Salinity	25 – 30 ‰ $\pm 10\%$	25 – 30 ‰ $\pm 10\%$	30-32‰
Ammonia	NA	NA	NA
Feeding	Daily, <24 hour old Artemia nauplii	Daily, <24 hour old Artemia nauplii	None
Reference Toxicant	KCL	KCL	Copper

*Study design also includes laboratory control.

B.7.2 10-day Whole Sediment Bioassay (Task 9)

The 10-day whole sediment toxicity test is proposed to commence less than two weeks after the sediment collection data (tests must commence no later than six weeks post collection). The decision to proceed with this testing will be at the direction of the NAE. Protocol for the whole sediment toxicity assays will be based on guidance established in the RIM (EPA/USACE, 2004).

Whole sediment acute toxicity testing will be performed using the marine invertebrates *Leptocheirus plumulosus* and *A. bahia*. *L. plumulosus* and *A. bahia* will be exposed to all eight sample composites plus the CLDS Reference Site sediment. A laboratory control will also be run with each test. Tests with each species will be 10-day static renewal exposures with mortality as the endpoint. Depending on the concentrations of ammonia in bulk sediment and/or overlying water, the test chambers may require purging to reduce ammonia below toxic levels.

The acceptable porewater ammonia concentration for *L. plumulosus* at test initiation is 60 mg/L total ammonia (EPA, 2001). For *L. plumulosus*, ammonia purging and monitoring will follow the guidance in Method for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod *Leptocheirus plumulosus* (EPA, 2001), which calls for aerating the sample and replacing two volumes of overlying water per day until thresholds are met. Overlying and porewater ammonia will be monitored each day during the purging period.

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The acceptable overlying water ammonia concentration for *A. bahia* is 0.6 mg/L as unionized ammonia. For *A. bahia*, ammonia purging and monitoring will follow the guidance in the 1994 memo from Elizabeth Sunderland to Mario Del Vicario (EPA/USACE 2002) which calls for replacing two volumes of overlying water per day until the unionized ammonia thresholds is met. Overlying ammonia will be monitored each day during the flushing period.

For both test species, organisms (20 per chamber) will be introduced to the test chambers once ammonia levels are within acceptable levels. Overlying water will be monitored on Days 0, 3, and 10 of the test, per the guidance in Appendix F of the Inland Testing Manual (Day 0, 10 monitoring) and NAE (intermediate Day 3 monitoring).

The static-renewal test conditions of one exchange per day should ensure that ammonia remains within acceptable range. However, if the Day 3 monitoring results show that ammonia was above the acceptable range, the static-renewal frequency will be increased to two exchanges per day. Other water quality parameters (temperature, pH, dissolved oxygen, and salinity) will be measured in all replicates at test initiation, in one replicate per day during the test, and again in all replicates at test termination.

The bioassay tests will also include a concurrent 96-h, water-only, reference toxicant test using cadmium (for *L. plumulosus*) or copper/ sodium dodecyl sulfate (for *A. bahia*) to assess the sensitivity of each test population. Specific test conditions for the whole sediment toxicity tests are provided in **Table B-9**.

Table B-9 10-day Whole Sediment Test Conditions

Parameter	<i>Leptocheirus plumulosus</i>	<i>Americamysis bahia</i>
Treatments*	8 Sample Composites and 1 CLDS Reference Site Control	8 Sample Composites and 1 CLDS Reference Site Control
Replicates	5	5
Test population	Juvenile -non reproductive adult (2-4mm)	1-5 days old
Temperature	Mean of 25± 2°C Maximum Deviation of 3°C	Mean of 20 ± 1°C Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation
pH	NA	NA
Salinity	20 – 30‰ ±10%	25 – 30‰ ±10%
Ammonia	Porewater unionized ammonia <0.8 mg/L	Overlying water unionized ammonia <0.6 mg/L
Feeding	None	Daily, <24 hour old Artemia nauplii
Reference Toxicant	Cadmium	Copper / Sodium Dodecyl Sulfate

*Study design also includes laboratory control.

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B.7.3 28-day Bioaccumulation Bioassay (Task 10)

Project bioaccumulation tests will commence within six weeks of sample collection. Chemical analyses will only be performed on tissue samples for sediments that pass the 10-day whole sediment acute toxicity test. Bioaccumulation tests will be performed by ESI according to the NAE Regional Guidance (EPA/USACE 1998, 2004).

Macoma nasuta and *Nereis virens* will be exposed to the eight sample composites, plus the CLDS Reference Site sediment, and native control sediments (i.e., negative laboratory control), for 28 days under flow-through conditions. *M. nasuta* and *N. virens* will be tested in separate 10-gallon aquaria, with five replicate aquaria per treatment. Twenty organisms will be introduced into each replicate aquaria.

Water quality parameters (temperature, dissolved oxygen, pH, and salinity) will be measured in all replicates at test initiation, in at least one replicate per treatment daily, and in all replicates at test termination. Flow rates into individual aquaria are measured daily and adjusted as necessary from Days 0 through 27 of the bioaccumulation test. If necessary, aeration will be provided to all test chambers to maintain dissolved oxygen >40% saturation.

At the end of the 28-day testing period, *M. nasuta* and *N. virens* will depurate in clean seawater for 24 hours. Following depuration, organism tissues will be homogenized, transferred into the appropriate chemistry jars for tissue chemistry analyses and stored frozen (<20°C) until analysis. Tissue sample container and storage requirements are detailed in **Table B-10** and Attachment 5.

Table B-10 Sample Container, Preservation, and Holding Time Requirements for Tissue Samples

Tissue Parameters	Mass (g)	Container	Preservation	Storage	Holding Time
Lipids	0	N/A – lipid content obtained from organic analysis			
Moisture	2-10	Glass	Freeze	-20°C	14 d
Organic Chemistry (PAHs/PCBs/Pesticides)	40	Glass	Freeze	-20°C	14 d (extract)/ 40 d (analyze) when thawed
Metals Chemistry	10	Glass	Freeze	-20°C	28 d (Hg), 180 d (other metals) when thawed

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Specific test conditions for the 28-day bioaccumulation test are provided in **Table B-11**.

Table B-11 28-Day Bioaccumulation Bioassay Test Conditions

Parameter	<i>Macoma nasuta</i>	<i>Nereis virens</i>
Treatments*	8 Sample Composites and 1 CLDS Reference Site Control	8 Sample Composites and 1 CLDS Reference Site Control
Replicates	5	5
Test population	Adult clam	Adult Polychaete; 3-15 grams
Temperature	Mean of $12 \pm 2^{\circ}\text{C}$ Maximum Deviation of 3°C	Mean of $12 \pm 2^{\circ}\text{C}$ Maximum Deviation of 3°C
Dissolved Oxygen	40% Saturation	40% Saturation
pH	NA	NA
Salinity	25 – 30‰ $\pm 10\%$	25 – 30‰ $\pm 10\%$
Ammonia	NA	NA
Feeding	None	None
Reference Toxicant	NA	NA

*Study design also includes laboratory control.

B.7.4 Preventive Maintenance

Routine testing and preventive maintenance of instrumentation needed to carry out bioassay test chamber monitoring is performed by the laboratory as part of their QA program. Details on the type of checks, frequencies, and corrective actions associated with the physical and chemical project measurements are included in the corresponding laboratory QA manuals.

B.7.5 Calibration Procedures & Frequency

Calibration of bioassay monitoring instrumentation will be guided by the procedures detailed in the laboratory QA manual.

Ammonia and pH measurement probes will be calibrated immediately before (daily) use and at the finish of (daily) monitoring activities. Thermometers and temperature recording devices will be checked daily against a standard thermometer. Dissolved oxygen probes will also be checked before (daily) use and at the finish of (daily) monitoring activities.

B.7.6 Laboratory QC Procedures

All bioassays will include a negative control, and a concurrent 96-hour, water-only, reference toxicant test to assess the sensitivity of each test population.

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Additionally, the biological QC elements detailed in the NAE QC summary tables, referenced in the RIM (EPA/USACE, 2004) and included in Appendix B will be adhered to, including test species age/health, control abnormality and mortality acceptance criteria and test-specific acceptability requirements.

B.7.7 Performance and System Audits

Bioassay programs include the use of reference toxicants to audit the performance of bioassay laboratory procedures. Laboratory system audits may be performed at the discretion of the NAE TM to ensure project personnel are performing project related tasks according to the project specific SAP and associated field and laboratory SOPs.

Laboratory Audit

ESI laboratory audits are conducted periodically by AECOM as part of their analytical subcontractor monitoring program. A typical systems audit includes review of the following areas:

- QA organization and procedures,
- Personnel training and qualifications,
- Sample log-in procedures,
- Sample storage facilities,
- Analyst technique
- Adherence to laboratory SOPs and project SAP,
- Compliance with QA/QC objectives,
- Equipment calibration and maintenance,
- Data recording, reduction, review, and reporting, and
- Cleanliness and housekeeping.

Preliminary results of the audit are discussed with the Laboratory Manager, Laboratory Project Manager, and Laboratory QA Coordinator. A written report that summarizes audit findings and recommends corrective actions is prepared and submitted to the Laboratory Manager for response, and to the AECOM Project Manager.

Data Package Audits

Audits of bioassay reports will be conducted for 100% of the packages received as part of the data review process. The review will include an evaluation of the package to ensure that (1) all required deliverables are provided, (2) the package contains the information necessary to reproduce the reported results, and (3) the QC acceptance criteria specified in the SAP were met. Any deficiencies will be communicated to the laboratory and documented in the project files.

Audit Samples

Audit samples will be incorporated into the program as discussed in the Laboratory QC Procedures section above. Reference toxicant results will be reviewed by the Biology/Bioassay Laboratory Coordinator and compared to the acceptable limits provided by the vendor. Failure to meet the acceptance criteria will result

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in the review of the results and supporting data by the laboratory to identify the cause of the failure. Depending on the outcome of this review, subsequent corrective actions may include the following:

- Qualification/flagging of affected data,
- Discarding affected data and re-analysis, or
- Discarding affected data, re-sampling, and re-analysis.

B.7.8 Nonconformance & Corrective Actions

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter SAP specification nonconformance, unacceptable procedures, or out-of-limit QC performance that can affect data quality. All corrective action proposed and implemented will be documented as detailed in Section 13 Reports.

Corrective action should only be implemented after approval by the AECOM Task Order Manager, or her designee.

Biological Laboratory Corrective Action

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as low/high water quality readings may be identified. Following consultation with laboratory personnel, it may be necessary for the Laboratory QA Coordinator to approve the implementation of corrective action. If the nonconformance causes project objectives not to be achieved, the AECOM Task Order Manager will be notified.

These corrective actions are performed prior to release of the reports from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and in the narrative report sent from the laboratory to the AECOM Biology/Bioassay Laboratory Coordinator and the AECOM Task Order Manager. If the corrective action does not rectify the situation, the laboratory will contact the AECOM Task Order manager who, in concert with the AECOM Biology/Bioassay Laboratory Coordinator and NAE's TM, will determine the action to be taken and inform the appropriate personnel.

B.8 Data Reduction/ Calculation of Data Quality Indicators

In addition to measurement sensitivity discussed previously, data usability will depend on the measurement accuracy and precision, as indicated by the corresponding accuracy and precision QC samples (i.e., method & equipment blanks, matrix spike samples, laboratory control samples (LCSs), certified/standard reference materials (CRMs/SRMs), and replicates). The field and laboratory data collected during this investigation will be used to achieve the objectives identified in Section A.7 of this QAPP. The QC results associated with each analytical parameter for each matrix will be compared to the measurement objectives presented in Section A.7.2 of this QAPP.

This section details the calculation of these DQIs.

B.8.1 Accuracy Assessment

One measure of accuracy will be percent recovery (%Rs), which is calculated for matrix spikes, surrogates, LCSs, and CRMs/SRMs. Percent recoveries for matrix spike results will be determined according to the following equation:

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$$\%R = \frac{(Amount\ in\ Spiked\ Sample - Amount\ in\ Sample)}{Known\ Amount\ Added} \times 100$$

Percent recoveries for LCS, CRM/SRM, and surrogate compound results will be determined according to the following equation:

$$\%R = \frac{Experimental\ Concentration}{Known\ Amount\ Added} \times 100$$

An additional measure of accuracy is blank contamination. The blanks associated with this project include laboratory method blanks and equipment rinsate blanks. The results of the laboratory and field blanks will be compared to the objectives in stated Section B.3.2 of the QAPP. Failure to meet these objectives may indicate a systematic laboratory or field problem that should be investigated and resolved immediately. Associated data may have limitations placed on its use, depending on the magnitude of the problem.

B.8.2 Precision Assessment

The RPD between sample replicates is calculated to compare to precision objectives (Section 3). The RPD will be calculated according to the following formula.

$$RPD = \frac{(Amount\ in\ Sample\ 1 - Amount\ in\ Sample\ 2)}{0.5 (Amount\ in\ Sample\ 1 + Amount\ in\ Sample\ 2)} \times 100$$

Failure to achieve precision objectives may result in the associated data having limitations placed upon its use.

Completeness Assessment

Completeness is the ratio of the number of valid sample results to the total number of samples analyzed with a specific matrix and/or analysis. Following completion of the analytical testing, the percent completeness will be calculated by the following equation:

$$Completeness = \frac{(number\ of\ valid\ measurements)}{(number\ of\ measurements\ planned)} \times 100$$

Failure to meet the completeness objective will require an assessment to determine if the missing or invalid data are critical to achieving the project objectives. Corrective actions may include re-sampling or re-analysis, depending on the type of problem, logistical constraints, etc.

B.8.3 Comparison to Project Objectives

In addition, the data obtained will be both qualitatively and quantitatively assessed on a project-wide, matrix-specific, and parameter-specific basis. Factors to be considered in this assessment of field and laboratory data will include, but not necessarily be limited to, the following:

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- Conformance to the field methodologies proposed in the FSP and QAPP,
- Conformance to the analytical methodologies provided in the QAPP,
- Adherence to proposed sampling strategy,
- Presence of elevated detection limits due to matrix interferences or contaminants present at high concentrations,
- Unusable data sets based on the data review results,
- Data sets identified as usable for limited purposes based on the data review results,
- Status of all issues requiring corrective action, as presented in the QA reports to management,
- Effect of nonconformance (procedures or requirements) on project objectives,
- Adequacy of the data as a whole in meeting the project objectives, and
- Identification of any remaining data gaps and need to reevaluate project decision rules.

This assessment will be performed by the technical team, in conjunction with the Project QA Officer, and the results presented in the final report.

B.9 Laboratory Operations Documentation

Laboratory data reduction procedures will be performed according to the following protocol. All information related to analysis will be documented in controlled laboratory logbooks, instrument printouts, or other approved forms. All entries that are not generated by an automated data system will be made neatly and legibly in permanent, waterproof ink.

Information will not be erased or obliterated. Corrections will be made by drawing a single line through the error and entering the correct information adjacent to the cross-out. All changes will be initialed, dated, and, if appropriate, accompanied by a brief explanation. Unused pages or portions of pages will be crossed out to prevent future data entry. Analytical laboratory records will be reviewed by the supervisory personnel on a regular basis, and by the Laboratory QA Coordinator periodically, to verify adherence to documentation requirements.

Sediment data will be reported on a dry weight basis. All data will be reported down to method detection limits (MDLs). Data between the MDL and the reporting limit (RL) will be flagged as estimated by the laboratory. Non-detected results (i.e., values below the MDL) will be reported as non-detect at the MDL. The detection limits associated with all non-detected results will be corrected for sample-specific factors such as analytical dilutions, percent moisture, sample volume, etc.

Data and report deliverables will be provided within the turnaround time specified in **Table A-3** and **Figure A-2** of the FSP. The chemistry laboratory will provide at least one report in a printed document format (PDF) and one EDD to the Physical and Chemistry Laboratory Coordinator. Upon approval of this SAP, the required format of the EDD will be provided (per the RIM). The hard copy data package will include the information summarized below:

- Case narrative (see description below);

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- Cross reference of field sample IDs and laboratory IDs;
- Method summary;
- COC documentation;
- Dates of sample extraction and analysis;
- Description of any data qualifiers used;
- Sample results, including units;
- Sample preparation information;
- Results for MS/MSDs, method or preparation/calibration blanks, LCSs, surrogate spikes, and laboratory duplicates; and
- Matrix-specific MDLs and RLs.

The case narrative will include the client name, project name and number, date of issuance, and a discussion of any deviations from analytical strategy, technical problems, and QC failures or non-conformances. The report will be signed by the Laboratory Project Manager.

Physical testing results will be provided as a hard copy report with grain size curves and as a simple spreadsheet of results (as percent passing each sieve plus hydrometer). The report will include a summary of results, method citations, and QC summary.

All laboratory reports will be maintained on the project website (along with all project related/generated information) with access only to designated AECOM and NAE personnel for a minimum period of five years.

B.10 Data Assessment Procedures

All data generated through field activities or through the analytical program will be reviewed prior to reporting. No data will be disseminated by AECOM until it has been subjected to the procedures summarized below.

B.10.1 Internal Laboratory Review

Prior to the release of any data from the laboratories, the data will be reviewed and approved by laboratory personnel. The review will consist of a tiered approach that will include reviews by the person performing the work, by a qualified peer, and by supervisory and/or QA personnel.

B.10.2 Validation of Analytical Data

Validation of the laboratory deliverables will be performed by AECOM. The laboratory data will be reviewed for the following, as appropriate to the method:

- Completeness of deliverable;
- Technical holding times;

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- Laboratory and field blank contamination;
- Surrogate spike recoveries;
- MS/MSD recoveries and relative percent differences (RPDs);
- Laboratory duplicate RPDs;
- LCS recoveries; and
- Field duplicate.

The evaluation will consist of a review of the data package narrative and QC result. If data are considered usable, no data qualification will occur. In the event that serious deficiencies in data quality are noted, the data may be rejected and considered unusable.

B.11 Verification and Validation Methods

B.11.1 Field Data Verification

Field records will be reviewed by the Field Services Task Leader to ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.
- Records are legible and in accordance with good recordkeeping practices, i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.
- Sample collection, handling, preservation, and storage procedures were conducted in accordance with the protocols described in the FSP and QAPP, and that any deviations were documented and approved by the appropriate personnel.

B.11.2 Laboratory Data Verification

Prior to being released as final, laboratory data will proceed through a tiered review process. Data verification starts with the analyst who performs a 100% review of the data to ensure the work was done correctly the first time. The data reduction and initial verification process must ensure that:

- Sample preparation and analysis information is correct and complete,
- Analytical results are correct and complete,
- The appropriate SOPs have been followed and are identified in the project records,
- Proper documentation procedures have been followed, and
- All non-conformances have been documented.

Following the completion of the initial verification by the analyst performing the data reduction, a systematic check of the data will be performed by an experienced peer or supervisor. This check will be performed to ensure that initial review has been completed correctly and thoroughly and will include a review of

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- Adherence to the requested analytical method SOP;
- Correct interpretation of chromatograms, mass spectra, etc.;
- Correctness of numerical input when computer programs are used (checked randomly);
- Correct identification and quantitation of constituents with appropriate qualifiers;
- Numerical correctness of calculations and formulas (checked randomly);
- Acceptability of QC data;
- Documentation that instruments were operating according to method specifications (calibrations, performance checks, etc.);
- Documentation of dilution factors, standard concentrations, etc.; and
- Sample holding time assessment.

A third-level review will be performed by the Laboratory Project Manager before results are submitted to clients. This review serves to verify the completeness of the data report and to ensure that project requirements are met for the analyses performed. A narrative to accompany the final report will be prepared by the Laboratory Project Manager.

B.11.3 Validation of Laboratory Deliverables

If requested by the PM, data will be reviewed as described in Sections D.1.3 of the QAPP. Upon completion of the validation, a brief report will be prepared discussing the acceptability of the data.

B.11.4 Verification during Data Management

All manually entered data (e.g., field data) will be proofed 100% against the original. Electronic data will be checked 100% after loading against laboratory data sheets for completeness and spot checked for accuracy.

B.12 Reconciliation with User Requirements

The field and laboratory data collected during this investigation will be used to achieve the objectives identified in Section A.7 of this QAPP. The QC results associated with each analytical parameter for each matrix will be compared to the measurement objectives presented in Section A.7.2 of this QAPP.

B.13 Reports

In addition to any potential audit and/or corrective action reports, several progress reports are scheduled to be delivered prior to submission of the project draft and final reports. The scheduled reports are as follows:

Sediment Chemistry Progress Report

Two copies of a written progress report will be provided within fifteen business days of the start of chemical analysis. The data will also be available by the completion of the 28-day bioaccumulation test to properly inform the decision-making process. Chemistry data will also be reported in the prescribed EDD format (to be finalized after the approval of the SAP). A completeness checklist and Quality Control Summary sheets as prescribed in the RIM will be filled out and submitted with the progress report for all data reported.

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Elutriate Chemistry Progress Report

Two copies of the written progress report will be provided within fifteen business days from completion of elutriate preparation to properly inform the decision-making process. Chemistry data will be approved EDD spreadsheet formats (once the SAP is approved). A completeness checklist and Quality Control Summary sheets as prescribed in the RIM will be filled out and submitted with the progress report for all data reported.

Tissue Progress Report

A written progress report, without statistical analysis, will be provided five weeks after the initiation of the tissue analysis. The report will present tabulated data for each test series and organism analyzed. Statistical analysis will be performed upon approval from NAE of the written progress report. Statistical analyses will be performed using wet weight contaminant data following Appendix D3 of the Inland Testing Manual (Fisher's Least Significant Difference multiple comparisons procedure; EPA/USACE, 1998). Two copies of the written progress report, updated to include results from the statistical analyses, will be provided within two weeks of authorization to proceed with the statistical analyses. An electronic copy of the tissue contaminant data will also be reported according to the "bioaccumulation results spreadsheet" required by the RIM (EPA/ USACE, 2004).

SPP Toxicity Test Progress Report

A progress report, without statistical analysis, will be provided within two weeks from start of SPP test. The report will include summaries of all procedures and present tabulated data for each test series and organism analyzed. Statistical analysis will be performed upon approval from NAE of the written progress report.

Statistical analyses will be performed following Appendix D2 of the Inland Testing Manual (EPA/USACE, 1998). In addition to the written report all data will be submitted in electronic transmittable spreadsheets.

Whole Sediment Acute Toxicity Test Progress Report

Two copies of the written progress report for toxicity and bioassay testing, without statistical analysis, will be provided within four weeks from test initiation. The report will include summaries of all procedures and present tabulated data for each test series and organism analyzed. Statistical analysis will be performed upon approval from NAE of the written progress report. Statistical analyses will be performed following Appendix D2 of the Inland Testing Manual. In addition to the written report all data will be submitted in electronic transmittable spreadsheets.

Draft and Final Reports

A draft report will be prepared to allow NAE an opportunity to review and comment on the document before finalizing. In each case, the draft and final reports will be transmitted to NAE within the established schedule (FSP **Figure A-2** and **Table A-3**) containing the following elements:

- Cover sheet, which includes contract number, statement of data authenticity, and official signature of release.
- Table of contents.
- Case narrative which shall include analytical methods used, field sample and laboratory number correlations, data qualifier definitions, and deviations from established QA/QC procedures with associated corrective action.
- Site Map(s) with sample locations with sufficient scale to show channel lines, shore landmarks such as building and docks.

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- Summary tables of chemical analyses and biological tests.
- Complete field report, which includes sampling procedures and any problems or deviations from the SAP encountered.
- Physical testing results (composite data).
- Sediment chemistry results (dry weight basis) for each analyte, which include project name, field sample ID number, batch numbers, collection/extraction/analysis dates, detection limits, and dilution factors.
- Biological testing results (toxicity).
- Sample documentation which includes original Chain of Custody record, shipping documents, and cooler receipt forms.
- QA/QC information which shall include method detection limits for each analyte, spike recoveries including surrogate recoveries, measures of precision, and all control limits for accuracy and precision. The QA/QC samples analyzed for each batch of samples (maximum of 20 samples to a batch) consist of:
 - Method blank.
 - Laboratory Control Sample (LCS).
 - Matrix Duplicate (using sample from project).
 - Matrix Spike/Matrix Spike Duplicate (using sample from project).
 - Standard Reference Material (SRM) (if available with analyte concentrations comparable to the project).
- The sediment chemistry data will also be presented in an EDD according to <http://www.nae.usace.army.mil/reg/rim.htm> under Data Reporting Requirements/Sediment Evaluation/EDD.
- Completion of the Completeness Checklist Table II-1 located under Appendix II of the RIM (Appendix B).

Delivery dates for all reports are provided on **Table A-3** and **Figure A-2**. Project reports, along with all relevant project records will also be maintained on AECOM's project website with access only to designated AECOM and NAE personnel for a minimum period of five years.

B.14 References

ASTM. Annual Book of ASTM Standards. American Society for Testing and Materials, Philadelphia, Pennsylvania.

United States Army Corps of Engineers. 2001. Requirements for the Preparation of sampling and Analysis Plans. Department of the Army Engineering and Design, Engineer manual 200-1-3. February, 2001.

United States Army Corps of Engineers. 2014. Safety and health Requirements. Department of the Army, U.S. Army Corps of Engineers Washington, D.C. 20314-1000. Engineering Manual (EM) 385-1-1. November 2014.

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United States Environmental Protection Agency/ United States Army Corps of Engineers. 2004. Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters. April, 2004.

United States Environmental Protection Agency. 1997. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846. Third Edition. May 1986, revised June 1997.

United States Environmental Protection Agency. 1995. QC/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations – Chemical Evaluations. EPA 823-B-95-001. Office of Water, Office of Science and Technology, Standards and Applied Science Division, Washington, DC.

United States Environmental Protection Agency/ United States Army Corps of Engineers. 1998. Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual. Inland Testing Manual. EPA-823-B-98-004. February 1998.

United States Environmental Protection Agency/ United States Army Corps of Engineers. 1991. Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual. EPA-503/8-91/001.

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Attachments

Sample Delivery Group Summary



Alpha Job Number : L17XXXX

Received :Month,Day, 2017

Reviewer :Sample Custodian

Account Name : AECOM

Project Number :

Project Name :

Delivery Information

Samples Delivered By : Alpha Courier

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
A	Absent/	Ice	2.0	
B	Absent/	Ice	2.0	

Condition Information

All samples on COC received? **YES**

Extra samples received? **NO**

Are there any sample container discrepancies? **NO**

Are there any discrepancies between sample labels & COC? **NO**

Are samples in appropriate containers for requested analysis? **YES**

Are samples properly preserved for requested analysis? **YES**

Are samples within holding time for requested analysis? **YES**

All sampling equipment returned? **NA**

Volatile Organics/VPH

Reagent Water Vials Frozen by Client? **NA**

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

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STUDY NO: 27413
SDG No:
Project:
Delivered via: Client
Date and Time Received: 04/28/16 1340 Date and Time Logged into Lab: 04/28/16 1610
Received By: JTP Logged into Lab by: JTP

Air bill / Way bill: No Air bill included in folder if received? N/A
Cooler on ice/packs: N/A Custody Seals present? N/A
Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
Number of COC Pages: 1
COC Serial Number(s): N/A
COC Complete: Yes Does the info on the COC match the samples? Yes
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
Were all samples received? Yes Were VOC vials free of headspace? N/A
Client notification/authorization: Not required pH Test strip ID number: N/A

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
RAD-004	27413-100	S	Hold: Composite	8 x 3.5 gallo	4C	Yes
RAD-005	27413-101	S	Hold: Composite	3 x 3.5 gallo	4C	Yes
RAD-006	27413-102	S	Hold: Composite	3 x 3.5 gallo	4C	Yes
RAD-007	27413-103	S	Hold: Composite	3 x 3.5 gallo	4C	Yes
RAD-008	27413-104	S	Hold: Composite	4 x 3.5 gallo	4C	Yes
RAD-009	27413-105	S	Hold: Composite	4 x 3.5 gallo	4C	Yes
RAD-010	27413-106	S	Hold: Composite	3 x 3.5 gallo	4C	Yes
RAD-011	27413-107	S	Hold: Composite	3 x 3.5 gallo	4C	Yes
RAD-001	27413-108	S	Subsample: 10-Day Solid Phase Assay, 28-day Bioaccum	8 x 3.5 gallo	4C	Yes
RAD-002	27413-109	S	Subsample: 10-Day Solid Phase Assay, 28-day Bioaccum	8 x 3.5 gallo	4C	Yes
RAD-003	27413-110	W	Subsample: SPP Assays;	5 x 5 gallon	4C	Yes
RAD-013	27413-111	W	Subsample: Elutriate Prep;	5 x 5 gallon	4C	Yes
RAD-014	27413-112	W	Subsample: Elutriate Prep;	5 x 5 gallon	4C	Yes
RAD-015	27413-113	W	Subsample: Elutriate Prep;	5 x 5 gallon	4C	Yes
RAD-016	27413-114	W	Subsample: Elutriate Prep;	5 x 5 gallon	4C	Yes
RAD-012	27413-115	S	Hold: Composite	3 x 3.5 gallo	4C	Yes

Notes and qualifications:

Samples arrived in a refrigerated truck the day they were sampled. JTP

Location: New Haven, CT		Logged By:	Date/Time:	Core/Sample ID
Project: New Haven FNP		Vessel: CanDu		
Equipment (Circle One) Vibracore/Grab Sampler				
Coordinates:		X:	Y:	
Project Depth (ft):		Penetration:	Recovery:	No. Attempts:
Depth (ft)	Sketch	Description		
1				
2				
3				
4				
5				
6				
7				
8				
Comments/Photographic References:				



Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: _____

Vessel/Sampling Platform:

Personnel (Name/Affiliation/Role):

Sampling Performed/Equipment Used:

Stations Sampled:

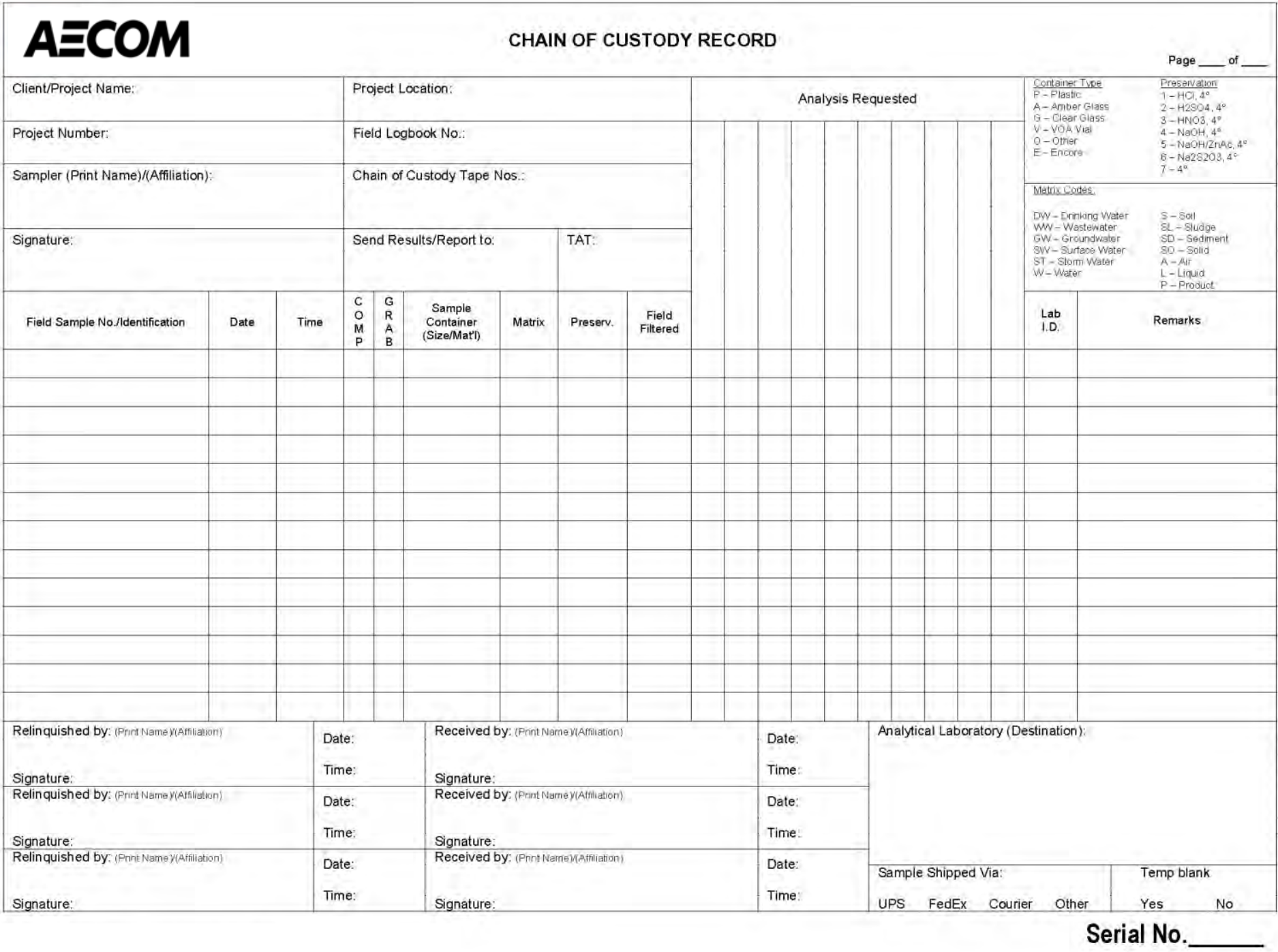
Health and Safety Issues:

Deviations from Approved Plan:

Dock Departure Time:

Dock Return Time:

Recorded by:



Serial No. _____

APPENDIX II

QUALITY CONTROL SUMMARY TABLES

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	
9. Were the samples properly labeled?	
10. Were all the requested data included?	
11. Were the reporting limits met?	
12. Were the chain-of-custody forms properly processed?	
13. Were the method blanks run and were the concentration below the acceptance criteria?	
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	
15. Were the SRM/CRM analyses within acceptance criteria?	

Table II-1 (continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	
19. Were surrogate recoveries within the required acceptance criteria?	
20. Were corrective action forms provided for all non-conforming data?	
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	

Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package

Table II-2 (continued): Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-3: Quality Control Summary for Analyses of Pesticides in Sediment, Tissue and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (< 20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package

Table II-3 (continued): Quality Control Summary for Analyses of Pesticides in Sediment, Tissue and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB congeners) in Sediment, Tissue and Water Matrices

Method Reference Number: 8082A

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration. (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package

Table II-4 (continued): Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB congeners) in Sediment, Tissue and Water Matrices

Method Reference Number: 8082A

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteri a Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package

Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
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Table II-5 (continued): Quality Control Summary for Analyses of Metals in Sediments, Tissue and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample.($<20\%$ RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD $<30\%$)			In Data Package

Table II-6 (continued): Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 $\leq 10\%$ mean $\leq 30\%$ mussel/oyster; $\leq 40\%$ clam larvae, $\leq 30\%$ sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 $\leq 10\%$ mean (no chamber $> 20\%$) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Sampling and Analysis Plan

Sampling & Environmental Testing – New Haven Harbor FNP
New Haven, Connecticut

Section: QAPP
Revision: 0
Date: August 2017

Appendices

Standard Operating Procedure

Field Records

Procedure Number: NHH-G-01

Revision No.: 0

Revision Date: August 2017

Prepared by

Rachel MacPhee

Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

Standard Operating Procedure Field Records

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Attachment 1 Example of Daily Activity Log

Attachment 2 Field Corrective Action Form

Standard Operating Procedure Field Records

1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for documentation of field activities conducted on the New Haven Harbor Federal navigation project (FNP), including sample collection events, field measurements, and site visits. This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Appropriate documentation of field activities provides an accurate and comprehensive record of the work performed, sufficient for a technical peer to reconstruct the day's activities and determine that necessary requirements were met. Field records also provide evidence and support technical interpretations and judgments. The procedures and systems defined in this SOP help ensure that the records are identifiable (reference the project task/activity), legible, retrievable, and protected from loss or damage.
- 1.2** Field data may be recorded electronically or in field logbooks, standardized forms, annotated maps, or photos. This SOP provides general guidance on field recordkeeping; additional details for specific procedures (for example, chain of custody, sample collection) are provided in the SOPs for the individual task.
- 1.3** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** Although record keeping itself does not generally pose significant health and safety risks, the tasks being implemented in the vicinity of individuals keeping records may require attention to safety practices. Project related physical, chemical and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017a).
- 2.2** Daily safety briefings will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. Weather conditions are often part of these discussions. As detailed in the APP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

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3.0 Interferences

Not Applicable

4.0 Equipment and Materials

The following equipment list contains materials that may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Bound field logbook
- Standardized field data sheets (refer to Section 5.3)
- Black ballpoint pen, Rite-in-Rain[®] pen, or black Sharpie[®] (or equivalent)
- Site maps
- Clipboard
- Three-ring binder or equivalent
- Camera (optional)
- Time piece

5.0 Procedures

5.1 General Requirements

5.1.1 The field records will contain sufficient detail so that the collection effort can be reconstructed without reliance on the collector's memory.

5.1.2 Pertinent field information will be recorded legibly in a logbook and/or an appropriate standardized form (as described herein), or directly onto a portable electronic device, such as a laptop computer. It is recommended that entries made by hand be made in black ballpoint pen.

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- 5.1.3** Entries will be signed and dated. No erasures or obliterations will be made. A single line will be drawn through incorrect entries and the corrected entry written next to the original strikeout. Strikeouts are to be initialed and dated by the originator.
- 5.1.4** If a ballpoint pen cannot be used because of adverse weather conditions (rain or freezing temperatures), fine-point Sharpie® or Rite-in-Rain® pens are acceptable substitutes. If conditions are such that only pencil can be used, an explanation will be included in the logbook and the affected data will be photocopied, signed as verified copy, and maintained in the project files as documentation that the information has not been changed.
- 5.1.5** Entries will be factual and observational (i.e., no speculation or opinion), and will not contain any personal information or non-project-related entries. Abbreviations and acronyms will be defined.
- 5.1.6** Field information will be recorded without delay – information recorded significantly after the fact will be dated as such.
- 5.1.7** Field activities and other events pertinent to the field activities will be documented in chronological order. Times will be recorded using Eastern Standard Time (EST) or Eastern Daylight Savings Time (EDT) notation for each entry.

5.2 Field logbooks

- 5.2.1** Field logbooks will be bound waterproof field books. Logbooks will be dedicated to the project and will not be used for any other project or purpose. Separate and dedicated logbooks will be kept for different operations running concurrently (e.g., sample collection on board the vessel, core processing, surface water collection on-board a vessel, surface water collection from the shore); individual tasks making up each operation will be maintained in the same logbook, if possible.
- 5.2.2** The cover and binding of each logbook will be labeled to identify the operation and dates included with the logbook; each page in the logbook will be consecutively numbered. Pages will not be removed or torn out of the logbook.
- 5.2.3** The title page of each logbook will contain the following:
- AECOM contact, AECOM office location, and phone number;
 - The logbook number (assigned at the time the logbook is signed out)
 - Project name and AECOM project number; and
 - Start and end dates of work covered by the logbook.

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- 5.2.4** To assist in the return of a field logbook in the event it is lost, the following will also be included on the title page: “\$25 Reward if found and returned to AECOM, 250 Apollo Drive, Chelmsford, Massachusetts 01824”.
- 5.2.5** At the front of each logbook will be a page cross-referencing each author’s printed name, signature, and initials.
- 5.2.6** A page header will appear on the first page of each day’s notes in the logbook, and activities for each day will be recorded on a new page. The page header will include:
- Name of author and other personnel on site (and affiliated organization if applicable);
 - Date;
 - Time of arrival (military time);
 - Proposed activity (task); and
 - Current weather and tidal conditions, and weather forecast for the day.
- 5.2.7** An abbreviated header, containing at least the date, will appear at the top of each additional page for the active date. Field forms require similar header information.
- 5.2.8** The field logbook will provide a chronology of events. At a minimum, documentation in a logbook will include the following (unless documented on a standard form):
- Names of visitor(s), including time of arrival and departure, the visitor’s affiliation, and reason for visit;
 - Summary of project-related communications, including names of people involved and time;
 - Time daily work commences and ceases;
 - Start and stop times of new tasks;
 - Start and stop times of significant stand-by time (work interruptions);
 - Safety or other monitoring data, including units with each measurement;
 - Deviations from approved scope of work, including the necessary approvals;
 - Progress updates;
 - Problems/delays encountered;

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- Unusual events; and
- Signature or initials of author on every page.

Additional detail on the contents of the field logbook is provided in Table 1.

5.2.9 The logbook will cross-reference the field forms if necessary; however, whenever possible, details recorded on the standardized forms will not be replicated in the logbook.

5.2.10 If there are additional lines on the page at the end of the day's activities, a line will be drawn through the empty space, and initialed and dated, leaving no room for additional entries.

5.3 Standardized forms

5.3.1 Standard forms for field data are provided with each SOP. The Daily Activity Log is attached to this SOP (Attachment 1). This form will be completed each day of active work and transmitted to the Task Manager or his/her designee. Refer to the appropriate SOP (e.g., core processing) for the forms specific to that task.

5.3.2 The information collected on any field form may alternately be collected electronically by PC/handheld as appropriate.

5.3.3 The following rules apply to the standardized forms:

- Each form will be signed and dated by the person completing the form.
- There will be no blank spaces on the form – unused spaces will have “not applicable” or “not available” explanations.

5.4 Maps and drawings

5.4.1 Pre-existing maps and drawings that include notations made in the field (for example, relocating of sample locations) will be referenced in the logbook and, like all field records, include the project/task name and number, site identification, and be signed/dated by the person that prepared them.

5.4.2 Maps and drawings will include compass orientation and scale. Sketches will include points of reference and distances to the reference points.

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5.5 Photographs and other photo documentation

Photographs or videos may be taken by the field team to help document site conditions, sample locations, or sample characteristics. Photographs and videos will be identified in the logbook or on the standard form by a unique numbering system. If photographs are collected by a digital camera, the file number as well as the photograph number will accompany the description of the photograph in the logbook. At a minimum, the date/time the photograph was taken, the general location, a brief description, and the photographer's name will be recorded. Additional information may include Differential Global Positioning System (DGPS) coordinates, direction the photographer was facing, and/or weather conditions. If necessary, an object will be included to indicate the scale of the object in the photograph.

5.6 Electronic files

5.6.1 Electronically recording devices may include data logging systems, laptops, or tablet computers.

5.6.2 Sufficient backup systems will be in place to protect against electronic data loss. Information will be saved to a disk or backed up immediately upon completion. The backup disk or other media (CD, flash drive) will then be stored in a secure location separate from the laptop or tablet.

5.6.3 Files will be uniquely identified and will be stored in the project files on the network in accordance with the workplan (AECOM 2017b). An unedited version of the file will be maintained and all subsequent manipulations tracked.

6.0 Quality Assurance/Quality Control

6.1 Entries in the field forms will be double-checked by the field team members to verify the information is correct.

6.2 Completed field forms will be reviewed by the Field Task Manager and/or his/her designee to verify that the requirements are being met. At a minimum, this should occur at the end of each day. When the review is complete, the reviewer will append his/her initials and date to the pages reviewed for documentation purposes.

6.3 If information recorded in the field is transcribed to another format, the original record will be retained for comparison purposes.

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7.0 Data and Records Management

- 7.1** Deviations to the procedures detailed in the SOP or approved plans will be noted in the field logbook or other appropriate field form at the time of occurrence and summarized on the Daily Activity Log (Attachment 1). A formal field correction action form will be completed (Attachment 2) and distributed as specified in the workplan (AECOM 2017b).
- 7.2** Proposed modifications to the SOPs or approved plans will be documented on a field correction action form. An example field correction action form is presented as Attachment 2.
- 7.3** Logbooks that are taken offsite from the field will be photocopied or scanned and filed at the end of each day to mitigate against the loss of historical entries should the logbook be lost in the field.
- 7.4** Field data forms and chain of custody will be filed in the office facility once they have been completed and distributed (if necessary), or at the end of each field day. These documents will be maintained in labeled three-ring binders or contained in some other organized manner that prevents loss.
- 7.5** Distribution of daily forms will be performed according to the needs of the project team and at the direction of the Field Task Manager or designee.

8.0 Personnel Qualifications and Training

- 8.1** Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017a], workplan [AECOM 2017b]). No specialized training is required. Nonetheless, these activities should be reviewed by the Field Task Manager, as described below.
- 8.2** The Field Task Manager is responsible for reviewing and approving the field records for accuracy, completeness, and conformance to the procedures in this SOP. The Field Task Manager is also responsible for ensuring that the field records are distributed to the appropriate personnel during field activities, ensuring that records are maintained properly on site, and for archiving the records upon completion of field activities.

Standard Operating Procedure Field Records

9.0 References

AECOM 2017a. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

Standard Operating Procedure Field Records

SOP No.: NHH-G-01

Revision: 0

Date: August 2017

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10.0 Revision History

Revision	Date	Changes
0	August 2017	NA

Standard Operating Procedure

Field Records

Table 1 Summary of Typical Field Information

General Information	Applicable Record¹
Project/task name/general location	All
Personnel on site (AECOM, clients, site contacts, regulators, oversight personnel, subcontractors, general public)	A, B
Results of phone calls, conversations (See workplan (AECOM 2017b) for project contact information)	B
Chronology of activities, including mobilization, investigatory activities, and demobilization	B
Weather conditions (initial and any changes; temperature, barometric pressure, wind conditions, precipitation)	B
Tidal and atmospheric information (if applicable)	B
Subcontractors, description of services to be provided, and any issues (equipment problems, corrective action, stand by time)	A, B
Health and safety (H&S) tailgate meetings, H&S monitoring	Refer to APP
Description of major equipment (survey vessels, sampling platforms, sampling devices) and any problems or conditions that might impact performance or data quality	A, B, F
Equipment decontamination	B
Any pertinent field observations such as difficulties in sampling or conducting measurements or unusual circumstances that could affect data quality (instrument problems, contamination sources)	B, D, F
Deviations from approved plan (schedule, relocation/elimination of locations, change orders), including rationale and approval	A, B, F
Sample collection and transfer summary, custody information from collection through analysis	C
Field measurements	
Description of Instruments (make, model, serial number) and inspection	B
Measurement date, time, location/station, results (units, any correction factors applied, calculations (if applicable)	D, E
Identity of person performing the measurements	D, E
Sampling information	
Equipment description and inspection	B, D, E
Sample selection criteria/rationale (if different from plan)	A, B, D, E
Sample location (GPS coordinates, depth, compass/distance from fixed points)	D, E
Sample description (recovery, moisture, color, odor, texture, general sediment profile/stratigraphy, artifacts)	D, E
Sample manipulations (homogenization, compositing, filtering, preservation)	D, E
Sample ID, segment/interval, date, time, and sampler identity	B, D, E
Sample parameters, containers (size/type), preservation	
Field and QC sample ID, storage container and conditions for each (sub)sample/parameter set	B, C, D, E

¹ Locations for this information may include but are not limited to: A: Daily Activity Log; B: Field Notebook; C: COC Form; D: Field Coring Log; E: Grab Collection Form; F: Field Corrective Action Form

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Attachment 1 Example of Daily Activity Log

Daily Activity Log	USACE Contract No. W912WJ-17-D-0003
New Haven FNP Sediment Evaluation	Delivery Order No. W912WJ17F0036
Date: _____	
Vessel/Sampling Platform:	
Personnel (Name/Affiliation/Role):	
Sampling Performed/Equipment Used:	
Stations Sampled:	
Health and Safety Issues:	
Deviations from Approved Plan:	
Dock Departure Time:	
Dock Return Time:	
Recorded by:	

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Attachment 2 Example of Field Corrective Action Form

Field Corrective Action Form		USACE Contract No. W912WJ-17-D-0003	
New Haven FNP Sediment Evaluation		Delivery Order No. W912WJ17F0036	
Date: _____			
Document (plan or SOP title):			
Activity:			
Proposed Modification:			
Effective Date:			
Rationale:			
Submitted by:		Date:	
Chief Scientist Approval:		Date:	
Task Order Manager Approval:		Date:	
NAE Technical Manager Approval:		Date:	

Standard Operating Procedure

Navigation/Positioning

Procedure Number: NHH-G-02

Revision No.: 0

Revision Date: August 2017

Prepared by

Rachel MacPhee

Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

Standard Operating Procedure Navigation/Positioning

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Standard Operating Procedure Navigation/Positioning

1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for positioning vessels in the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Positioning will be conducted to locate the vessel(s) with sufficient accuracy and precision to meet project objectives during sampling or measurement activities.
- 1.2** This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to position vessels. Specific information regarding proposed sampling and/or measurement locations is provided in the workplan (AECOM 2017a)
- 1.3** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** The health and safety (H&S) considerations for the work associated with this SOP, including physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017b). The major health and safety considerations for the work associated with navigating/positioning the vessel are the marine safety aspects of the program.
- 2.2** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. Weather conditions are often part of these discussions. As detailed in the APP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

Standard Operating Procedure Navigation/Positioning

3.0 Interferences

Differential global positioning system (DGPS) signal interferences/blockage can occur from time to time by bridges or other structures. These interferences can prevent system function until satellite signals are re-established. If insufficient satellite coverage occurs for proper function, the user will be alerted by the HYPACK system. In these cases the vessel will be repositioned to obtain better satellite coverage.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Personal protective equipment (PPE) and other safety equipment, as required by the APP;
- Sampling vessel(s) adequately sized and equipped for the task and expected conditions, including high frequency (VHF) radio, ground tackle, and required U.S. Coast Guard safety gear;
- Navigation charts and sampling/measurement locations figure;
- Electronic navigation charts with pre-loaded waypoints for all sampling and measurement locations - refer to the workplan (AECOM 2017a);
- DGPS Receiver with an accuracy of ± 1 foot;
- DGPS External Antennas;
- Field laptop computer with HYPACK survey software;
- Fixed water level measurement and recording gauges (approximately one per river mile);
- Equipment user manuals;
- Table of target sampling/measurement location coordinates;
- Assorted nautical equipment (e.g., anchors, lines, personal flotation devices);
- Logbook and ballpoint pen;
- Sample collection forms; and
- Real time kinematic (RTK) DGPS positioning system (optional).

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5.0 Procedures

Sampling and measurement activities will be conducted from a vessel. In accordance with procedures outlined below, these vessels must be properly positioned and their position recorded before each activity can begin. The following describes the procedures that will be performed to accurately position sampling vessels at a designated sampling location, and the pertinent observations that will be recorded in the appropriate field notebook and/or data sheet.

Positioning will be achieved by using a DGPS integrated with HYPACK survey software in order to obtain the real time position of the vessel, in relation to planned sampling stations, displayed on an electronic nautical chart. Survey personnel will follow the appropriate sections of equipment user's manuals to ensure proper equipment operation and system performance.

5.1 Positioning the vessel

This section gives the step-by-step procedures for vessel positioning. Observations made during vessel positioning will be recorded on the sample collection forms, other standardized forms, and/or logbook, as appropriate.

A DGPS will be used to establish locations during implementation of activities specified in the workplan (AECOM 2017a). While this SOP provides general guidance and procedural steps, personnel performing positioning activities also will follow the appropriate sections of equipment user's manuals and have the manuals available for reference while operating the equipment.

The following procedures describe the steps to establish position at a location, as well as the steps to adjust the positioning for collection of additional samples.

- 5.1.1** Obtain the appropriate form(s). Initiate the Daily Activity Log provided in SOP NHH-G-01 (Field Records).
- 5.1.2** Obtain the target sampling/measurement locations. These locations will have been selected prior to commencement of field activities, as described in the workplan (AECOM 2017a). The location of each target sampling location will be established in the local State Plane Coordinate System with respect to the North American Datum of 1983 (NAD83).
- 5.1.3** Enter the coordinates for each sampling location as a waypoint into the HYPACK software package. Confirm accuracy of each entry against the coordinates established in the corresponding workplan (AECOM 2017a).

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- 5.1.4** Configure the HYPACK system for the survey, including setting the survey grid to the local State Plane Coordinate System with respect to the North American Datum of 1983 (NAD83 - feet), and setting the “target ring” or maximum allowable offset based on task specific requirements listed in the corresponding workplan (AECOM 2017a).
- 5.1.5** If less than sub-meter accuracy is required, a DGPS base station will be established over a shore-based marker prior to sampling or measurement operations. The operation and horizontal/vertical accuracy of the vessel mounted DGPS will be verified at another shore-based marker by recording observed horizontal and vertical (XYZ) data and comparing these data to the published XYZ data for a given point. After initial DGPS system verification, a temporary benchmark may be established at a location convenient to the vessel to facilitate daily DGPS system performance verification. DGPS system performance verification will be conducted twice per day and documented in the logbook and vessel data logger. The horizontal and vertical accuracy will be compared to shore-based markers to verify performance. Elevations will be recorded in North American Vertical Datum of 1988 (NAVD88) with an accuracy of +/- one foot.
- 5.1.6** Install the DGPS antennae in a safe location which accurately represents the actual sample or measurement collection point; (e.g., immediately adjacent to a coring well, or mounted to the A-frame).
- 5.1.7** Identify and approach actual sampling/measurement locations by using data from the DGPS/HYPACK system in the navigation mode. The navigation mode provides information on heading, distance remaining, and time remaining. This information is based on the selected waypoint location and the present location of the vessel.
- 5.1.8** For sediment sampling, the vessel will be secured by lowering spud poles once in position within the station “target radius”. In water depths that preclude the use of spud poles, maneuver the vessel approximately 60 feet up-current (or up-wind in slack conditions) of the target, drop the anchor, and pay out anchor line until the vessel drifts within the “target radius”. A second anchor set may be required to increase lateral stability under certain conditions.
- 5.1.9** For water column sampling, the vessel will be positioned over each sampling/measurement location with no contact with the bottom. The operator will utilize the onboard navigation system to attempt to maintain positioning of the vessel within 10 feet of the sampling/measurement location.

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5.1.10 Once the vessel is on location (and secured, for sediment sampling), note the coordinates from the DGPS unit and check the coordinates to verify that the vessel is within the pre-determined range of the target location as defined in workplan (AECOM 2017a). If not acceptable, adjust the vessel's location, and recheck the position. Repeat this process until the vessel's position is within acceptable range of the target. Record the final coordinates on the appropriate form. Record the actual sampling coordinates electronically (using HYPACK).

5.1.11 Once the coordinates are acceptable, perform the sampling or measurement activity at the location. Record final location coordinates on the appropriate form. For sediment sampling, final location coordinates will be recorded once the sampling device has penetrated the sediment to the target depth or refusal and prior to retrieval. Plot locations onto a master chart or use computer-based, real-time software to verify location.

5.1.12 To adjust the vessel's position to repeat an attempt at sediment sampling, the vessel will be moved by allowing it to rotate around the spud pole or by adjusting an anchor line until the new position for the sampling device has been established. Record the new position.

5.1.13 At the end of the sampling day, check the data loaded onto the DGPS units to verify the existence of locations where data were collected. Download HYPACK navigation files to a portable data storage device and transfer data to an applicable secure project directory.

5.2 Elevation measurements

5.2.1 In order to establish the elevation of the sediment surface at locations within the harbor, a system will be established whereby the water level of the harbor is continuously monitored and recorded for use as a local reference (e.g., local NOAA station).

5.3 Calibration, maintenance, and use of field instruments

5.3.1 Poor DGPS Reception or System Failure

If insufficient satellite coverage occurs for proper function, the user will be alerted by the HYPACK® system. In these cases the Field Task Manager will be notified that verification of the field position of the vessel at the target location cannot be performed. The Field Task Manager will review the situation with respect to available reference resources and may provide the field team with alternate locations, as required by the workplan (AECOM 2017a). The selection of alternate sampling locations will be made jointly through discussions with the Field Task Manager and the boat personnel.

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When satellite reception is insufficient to meet system accuracy requirements, system error codes will appear on the output screen. Nonetheless, proper operation of the DGPS / HYPACK navigation system can be verified by checking the displayed vessel position on the electronic base map against surrounding geographic features. This activity will be undertaken at the start of each day after start-up as a quick check to verify proper system function. Note: system function errors will be obvious and rigorous checking of the system is not necessary.

5.3.2 Maintenance

Prior to use, the DGPS units will be inspected for functionality. Maintenance and use of DGPS units will follow the appropriate sections of the equipment user's manual. Field personnel will have the manual available for reference. Equipment maintenance will be recorded in the field logbook, including the reason for the maintenance (routine or because of a problem), actions taken, and final resolution (e.g., correction of the problem, replacement of the instrument).

6.0 Quality Assurance/Quality Control

- 6.1** Actual sampling/measurement locations will be verified as being within the workplan-specified radius/tolerance surrounding the target coordinates specified in the workplan (AECOM 2017a). Using a HYPACK navigation system allows the user to see the real time position of the sampling vessel in relation to the designated position of the sampling/measurement station and the user defined “target radius” surrounding each station. This visual confirmation on the electronic chart is also complimented by a HYPACK data display that indicates the actual distance to target. Using these two features ensures proper vessel positioning.
- 6.2** DGPS system performance will be verified by confirming the accuracy of the initial HYPACK configuration (i.e., geographic reference) and by regular system checks during the course of the day.
- 6.3** The quality of the data provided by the DGPS unit is monitored by HYPACK as another control feature built into the system. In the event there is degradation in DGPS signal quality, either by a reduced number of available satellites or satellite geometry, the HYPACK system will alert the operator of the reduced quality of horizontal and vertical precision levels.
- 6.4** Data recorded manually and electronically (see Section 7.2) will be cross-checked for accuracy

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7.0 Data and Records Management

- 7.1** Field records will be generated as outlined in SOP NHH-G-01 (Field Records). This document provides specifics on recording data for field activities. At a minimum, sample position information (x, y, and z), verification of DGPS system performance, and any positioning-related problems encountered will be recorded. Additional information may be required for sample collection or measurement activities and are outlined in the relevant SOPs.
- 7.2** Position data will be saved electronically at the time of sampling within HYPACK and recorded manually on the sample collection/measurement forms. Although the electronic record represents the primary record, the sample collection/measurement form information will serve as a backup to the electronic file.
- 7.3** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A field correction action form will be completed (refer to SOP NHH-G-01 – Field Records) and distributed as specified in the workplan (2017a).
- 7.4** All records (electronic and hard copy) associated with the activities described in this SOP will be maintained in accordance with the workplan (AECOM 2017a).

8.0 Personnel Qualifications and Training

Individuals executing these procedures will have read, and be familiar with, the requirements of this SOP. Vessel navigation and positioning will only be performed by experienced DGPS / HYPACK operators.

9.0 References

AECOM 2017a. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

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NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

10.0 Revision History

Revision	Date	Changes
0	August 2017	NA

Standard Operating Procedure

Equipment Decontamination

Procedure Number: NHH-G-03

Revision No.: 0

Revision Date: August 2017

Prepared by

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Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

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Standard Operating Procedure Equipment Decontamination

SOP No.: NHH-G-03
Revision: 0
Date: August 2017
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Standard Operating Procedure Equipment Decontamination

SOP No.: NHH-G-03
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1.0 Scope and Applicability

The purpose of this document is to define the standard operating procedure (SOP) for decontamination of equipment, instruments, and other materials used during implementation of field tasks on the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Decontamination is the process of neutralizing, washing, and rinsing exposed surfaces of equipment to minimize the potential for contaminant migration and/or cross-contamination. This procedure does not apply to personnel decontamination which is described in the site-specific Accident Prevention Plan (APP) (AECOM 2017a).

It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical and biological hazards, are addressed in the APP (AECOM 2017a).
- 2.2** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the APP (AECOM 2017a), everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

- 3.1** Equipment decontamination should be performed in an area that does not interfere with sampling activities, but sufficiently close to maintain an efficient working environment. Whenever possible, decontamination activities will be performed in a location that is not subject to potential sources of contamination (for example, generators and other combustion engines). Where decontamination is required on a boat, the vessel's engines must be turned off during decontamination. Ideally, boat engines and/or generators should be shut off during

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collection of equipment blanks, consistent with collection of sediment/ water samples. If this is not possible, then the sampling platform should be positioned upwind from any running combustion engines.

3.2 Equipment that is improperly or inadequately decontaminated may result in biased sample results. To avoid sample contamination, the procedures and equipment specified in this SOP are to be followed. Specifically:

- The decontamination materials, including detergent, water, etc., will meet the specifications of the SOP;
- Buckets and other containers holding decontamination solutions will be labeled to segregate containers holding “dirty” from “clean” solutions, and brushes will be dedicated to a particular step in the decontamination process; and
- Decontaminated equipment that is not immediately reused will be covered/wrapped in plastic or aluminum foil (shiny side out) and marked to indicate it is clean.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Personal protective equipment (PPE) and other safety equipment, as required by the APP (AECOM 2017a);
- Bristle brushes;
- Plastic wash/rinse buckets or tubs;
- Phosphate-free biodegradable detergent (e.g. Liquinox®, Alconox®);
- Deionized "analyte-free" water (DIW);
- Stainless steel bowls or pans (labeled as needed);
- Aluminum foil;
- Plastic sheeting;
- Zipper-lock bags;
- Tap water (from any treated municipal water supply);
- Sample container(s) for equipment rinsate blank, if collected; and
- Field logbook and standardized forms as needed.

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5.0 Procedures

Sampling equipment (excluding newly purchased disposable equipment) that comes into contact with the media to be sampled will be decontaminated prior to use in the field to eliminate or minimize cross-contamination. The frequency of decontamination is provided in the task-specific SOPs (for example, surface water sampling, grab sampling, sediment collection via vibracore, core processing). Sufficient decontaminated equipment will be available to be dedicated to the sampling locations planned for each day, where feasible. Equipment will be decontaminated in the area designated for decontamination.

Surface water and sediment samples may be submitted for chemical, biological, and geotechnical analyses as described in the workplan. Sampling equipment will be decontaminated as described in Section 5.0 below. Decontamination of the sampling equipment will be commensurate with the analyses to be performed.

5.1 General preparation

Inspect equipment needed for sample collection to ensure that it is in good working order and establish an equipment decontamination area that includes a collection basin that can be placed beneath the equipment to collect decontamination fluids, brushes, and a series of wash bottles for each of the solutions specified in the following section. Personnel will dress in suitable PPE to reduce exposure to contaminants (refer to the APP [AECOM 2017a]).

- 5.1.1** Residual sediment will be scraped off and the equipment rinsed with site water (on the sampling vessel while on site).
- 5.1.2** Equipment may be rinsed with potable water if needed to further remove gross contamination.
- 5.1.3** Equipment will be placed in a wash tub or bucket (if size allows) containing Alconox® (or other phosphate-free detergent) along with potable water, and scrubbed with a bristle brush or similar utensil.
- 5.1.4** Equipment will be rinsed twice with potable water over a bucket using a squeeze bottle or pump sprayer.
- 5.1.5** Following decontamination, equipment will be placed in a dedicated clean area or will be protected from re-contamination by covering with plastic or wrapping in foil.
- 5.1.6** Rinse water and detergent water will be replaced frequently.

- 5.2** Field instrumentation should be cleaned according to the manufacturer's instructions. Care will be taken to prevent damage to equipment. When possible, instruments which are

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difficult to decontaminate, such as cameras and data logging instruments, may be protectively wrapped to reduce or eliminate the need for decontamination.

- 5.3** Pumps used for surface water sampling will be rinsed with potable water prior to and following each day of use. Decontamination of the pump between stations or between depths is not required.
- 5.4** Other sampling equipment that might be used and that has had direct contact with sediments or wastes will be decontaminated at a designated area prior to leaving the Site. If the above decontamination procedures are not applicable or feasible, the decontamination procedure will be as follows:
- 5.4.1** Equipment will be wrapped or draped in plastic or placed in the plastic-lined cargo area of a truck for transport to the area designated for decontamination.
- 5.4.2** Equipment will then be rinsed, by hose or high pressure spray, with potable water.
- 5.5** Equipment rinsate blanks will be collected to assess the adequacy of equipment decontamination procedures. Equipment rinsate blanks will be submitted for testing at the frequency specified in the workplan. The equipment rinsate blank collection procedures are included in the SOPs for the individual tasks (surface water sampling, sediment sampling, core processing, etc.) and in the workplan (AECOM 2017b).

6.0 Quality Assurance/Quality Control

- 6.1** Decontamination QA/QC procedures described in Section 5.0 will be performed to assess the adequacy of equipment decontamination procedures. Equipment rinsate blanks will be collected at the frequency specified in the workplan.
- 6.2** It is the responsibility of the Field Task Manager to periodically check/ensure that the equipment decontamination procedures are in conformance with those stated in this SOP.

7.0 Data and Records Management

- 7.1** Documentation of decontamination procedures will be contained in the field logbook or recorded on the appropriate task-specific standardized form and should include:
- A list of equipment being decontaminated along with the date and time;
 - The names of the project staff performing the decontamination;
 - Documentation of equipment rinsate blanks including sample ID, date and time, the equipment rinsed, collector, and parameters; and

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- 7.2** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A field corrective action form will be completed (refer to SOP NHH-G-01 – Field Records) and distributed as specified in the workplan (AECOM 2017b).

8.0 Personnel Qualifications and Training

Individuals executing these procedures will have read, and be familiar with, the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017a], workplan [AECOM 2017b]). Decontamination of field equipment is a relatively simple procedure; no specialized training is needed. However, execution of these activities will initially be supervised by more experienced personnel.

9.0 References

AECOM 2017a. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

10.0 Revision History

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0	August 2017	NA

Standard Operating Procedure

Sample Custody

Procedure Number: NHH-G-04

Revision No.: 0

Revision Date: August 2017

Prepared by

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Date: _____

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Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

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Standard Operating Procedure Sample Custody

SOP No.: NHH-G-04
Revision: 0
Date: August 2017
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Attachment 1 Example Chain-of-Custody Form

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Sample Custody

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1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for the chain-of-custody (COC) procedures associated with samples collected in the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). The objective of COC procedures is to provide sufficient evidence of sample integrity to satisfy data defensibility requirements. Samples may include sediment or water collected or generated for chemical, biological, and/or physical analyses, and associated quality assurance (QA) analysis. This SOP is intended to be complete enough so that: 1) the steps which could affect tracking, documentation, or integrity of samples are explained in sufficient detail and 2) different sampling personnel following these procedures will deliver samples to the laboratory which are equally reliable and consistent.
- 1.2** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** Although COC activities do not generally pose significant health and safety risks, sample exposure via external container residues may occur and much of the work going on in the vicinity of sample custodians requires attention to safety practices. Project-related physical, chemical and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017a).
- 2.2** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the APP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

Not applicable.

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4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Personal protective equipment (PPE) and other safety equipment, as required by the APP (AECOM 2017a);
- Sample containers as specified in the workplan (AECOM 2017b)
- Sample labels;
- Chain of custody forms;
- Custody tape or seals;
- Field logbook;
- Ballpoint pen or fine-tipped marker (e.g., Sharpie®); and
- Clear plastic sealing tape.

5.0 Procedures

5.1 General requirements

5.1.1 As few people as possible should handle the samples.

5.1.2 Sampling personnel should be able to testify that tampering of the samples could not occur without their knowledge.

5.2 Sample identification

Each sample, including field samples and quality control (QC) samples (e.g., equipment rinsate blanks, field duplicates) will be assigned a unique identification. Refer to the workplan (AECOM 2017b) for the sample identification protocol.

5.3 Sample labeling

5.3.1 A label will be attached to each bottle used for sampling. Waterproof, adhesive labels are preferred. Labels will be applied to the container, not the lid, whenever possible.

5.3.2 When practical, the project identification, sample matrix, laboratory designation/analyses requested, field sample identification code, and preservation will be typed or printed onto the label before sampling. The label will be protected from water and solvents with clear packing tape, except in cases where not appropriate.

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- 5.3.3** Completion of the sample labels (including the sampler's initials and the date and time of sample collection) will occur at the time of sample collection. Labels will be completed in waterproof, indelible ink.

5.4 Sample tracking

- 5.4.1** From the time of collection through transportation, the handling of samples will follow COC procedures. A representative from each sampling team (e.g., from each vessel) will be assigned as the field sample custodian. This individual will be responsible for the custody of the samples from collection until release for processing or shipment to the laboratories. The field sample custodian will provide a sample transfer/custody form and the completed and electronic versions of the sample collection forms (refer to SOPs NHH-S-01 – Grab Sampling, NHH-S-02 – Sediment Sampling Using a Vibracorer, and NHH-S-03 – Core Processing) when relinquishing the collected samples for sample processing or shipment. The samples will be verified against the sample transfer/custody form. An example standard chain of custody (COC) form is provided in Attachment 1.

- 5.4.2** A sample is considered under a person's custody if one or more of the criteria are met:

- Sample is in the person's possession;
- Sample is in the person's view after being in person's possession;
- Sample was in the person's possession and then was locked up to prevent tampering; or
- Sample is in a designated secure area.

- 5.4.3** Samples collected for analysis will be continuously tracked and while in transit to the laboratory by use of the following procedures below.

- 5.4.4** Individual sample bottles will be properly labeled and securely sealed before being placed in the container for shipment to the laboratory.

- 5.4.5** Pertinent information will be entered on the COC form (Attachment 1) and will include:

- Project identification
- Signatures of samplers;
- Sample identification code. This code should be unique to the sampling event and to the program and must agree exactly with the field sample identification code recorded on the bottle label;
- Date and time of sample collection,

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- Sample matrix (sediment, water, etc.);
- Analyses requested;
- Number of sample containers;
- Preservative;
- Grab or composite sample designation (if applicable);
- Sampler's remarks (optional). These comments may serve to alert the laboratory to highly contaminated samples or identify QC sample requirements.
- Signatures of individuals involved in sample transfer;
- destination (e.g., laboratory name and location);
- Page number (for example: 1 of 2, 2 of 2);
- If applicable, COC tape numbers; and
- If applicable, the air bill or other shipping number.

This information is consistent with guidance in SW 846, Test Methods for Evaluating Solid Waste (USEPA, 1993).

- 5.4.6** The COC will be manually filled out completely and legibly in indelible ink. COCs may be pre-printed with known information (project identification, parameters to be analyzed, etc.). Corrections will be made, if necessary, by drawing a single line through and initialing and dating the error. The correct information will then be recorded with indelible ink. There should be no unexplained blank spaces. Blank lines will be lined out and initialed and dated.
- 5.4.7** Each COC will be cooler-specific (i.e., list only the samples packed in the cooler). Information on the COC must agree exactly with that recorded on the sample containers. Discrepancies may result in the samples being incorrectly logged into the laboratory or delays in initiating sample analysis.
- 5.4.8** The completed COC form will be signed, dated, enclosed in a sealable plastic bag, and placed in the container prior to shipment/ transfer to a courier. A copy of the COC will be retained by field personnel and stored in a dedicated binder or file. Additional copies will be distributed via email or fax as follows:
- Project Chemist or his/her designee;
 - Data Management Task Manager or his/her designee; and
 - Laboratory project manager at each laboratory being used.
- 5.4.9** If samples are to be shipped by commercial overnight carrier, COC seals must be used and the COC seal numbers recorded on the COC form. Refer to SOP NHH-G-05 –

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Packaging and Shipment of Environmental Samples for specific packaging procedures. Representatives of commercial carriers are not required to sign the COC form.

- 5.4.10** If samples are hand carried to a laboratory, custody will be maintained and documented on the COC form through the process (e.g., from the person packing the cooler to the person transporting the samples to the laboratory).
- 5.4.11** If samples are transmitted to the laboratory by courier, the procedures described in either Section 5.4.10 or 5.4.11 will be followed, depending on whether the courier is a commercial courier or laboratory representative, and whether the cooler has been secured by COC seals prior to pick up by a laboratory courier.
- 5.4.12** Upon receipt at the laboratory, the designated laboratory sample custodian will sign the COC form indicating receipt of the incoming field samples. The samples will be checked against the COC form upon arrival at the laboratory. The receiving personnel will enter all arriving samples into the laboratory system. Any discrepancies between the samples and the COC form(s), or any evidence of tampering with the shipping container or the custody seal will be immediately reported to the Project Chemist. The laboratory sample custodian will check the temperature of the cooler upon arrival at the laboratory and record the measured temperature on the COC and/or appropriate sample/cooler receipt forms. The Project Chemist will be immediately notified of any sample preservation issues, including temperature exceedances.
- 5.4.13** A completed copy of the COC form will be distributed via email or fax to the Project Chemist within 24 hours of sample receipt at the laboratory. The original will be retained by the laboratory.

6.0 Quality Assurance/Quality Control

- 6.1** Completed COCs will be reviewed by the individuals preparing the samples for shipment for completeness, accuracy, and legibility. Specifically, the samples and COC record will be compared to ensure agreement between the sample labels and the COC, and to verify the number of sample containers.
- 6.2** These records are subjected to periodic review by the Field Task Manager to verify adherence to the procedures outlined in this SOP.

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7.0 Data and Records Management

- 7.1** The records associated with the custody process (transfer forms, COC records, airbills, etc.) will be maintained in an organized and contained manner.
- 7.2** COC records will be distributed to the appropriate personnel as described in the SAP.
- 7.3** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A field corrective action form will be completed (refer to SOP NHH-G-01 – Field Records) and distributed as specified in the workplan (AECOM 2017b).

8.0 Personnel Qualifications and Training

Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017a], workplan [AECOM 2017b]). No specialized training is required; however, execution of these activities will initially be supervised by more experienced personnel.

9.0 References

AECOM 2017a. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

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10.0 Revision History

Revision	Date	Changes
0	August 2017	NA

Attachment 1 Example Chain-of-Custody Form

[illegible]

Standard Operating Procedure

Sample Packaging and Shipping

Procedure Number: NHH-G-05

Revision No.: 0

Revision Date: August 2017

Prepared by

Rachel MacPhee

Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

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SOP No.: NHH-G-05
Revision: 0
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Standard Operating Procedure Sample Packaging and Shipping

SOP No.: NHH-G-05
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1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for packaging and shipping samples collected on the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Sample packaging and shipment generally involves the placement of individual sample containers into a cooler or other similar shipping container and placement of packing materials and coolant in such a manner as to isolate the samples, maintain the required temperature, and to limit the potential for damage to sample containers when the cooler is transported.
- 1.2** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** Although packaging activities do not generally pose significant health and safety risks, sample exposure via external container residues may occur and much of the work going on in the vicinity of sample custodians/shippers require attention to safety practices. Project related physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017a).
- 2.2** Sample packaging and shipping involves potential physical hazards primarily associated with handling of occasional broken sample containers and lifting of heavy objects. Adequate precautions will be taken, including minimizing the weight of individual coolers, using hand carts to transport coolers, and using the buddy system to lift coolers into and out of vehicles.
- 2.3** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the APP (AECOM 2017a), everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

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3.0 Interferences

Improper sample storage or inadequate protection against breakage and cross-contamination could potentially affect sample results. The field team will follow the details of this SOP to minimize these effects.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Personal protective equipment (PPE) and other safety equipment, as required by the APP (AECOM 2017a);
- Inert packing material (e.g., foam peanuts, vermiculite, cardboard, bubblewrap, etc.);
- Sample containers as specified in the workplan (AECOM 2017b);
- Sample labels;
- Chain of custody (COC) forms;
- Insulated coolers;
- Custody tape or seals;
- Indelible marking pens;
- Shipping tape;
- Sealable plastic bags;
- Temperature blanks (provided by the laboratory);
- Field logbook;
- Ice or similar chilling source;
- Ballpoint pen or fine-tipped marked (e.g., Sharpie®); and
- Clear plastic sealing tape.

5.0 Procedures

5.1 General requirements

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Sample Packaging and Shipping

- 5.1.1** Vehicular sample transport will adhere to normal/applicable Department of Transportation (DOT) regulations. DOT regulations/guidelines related to sample shipments can be viewed on AECOM's SH&E intranet web page.
 - 5.1.2** An area for storing unused sample containers/coolers and a clean area for sample handling, packaging, and shipment will be identified.
 - 5.1.3** Laboratories will often re-use coolers. The interior and exterior of each cooler received at a project location should be inspected for cleanliness before using it. Any coolers that have cracked interior or exterior linings/panels or hinges should be discarded. Any coolers missing one or both handles should also be discarded if replacement handles (i.e., knotted rope handles) cannot be fashioned in the field.
 - 5.1.4** Excess strapping tape and old shipping labels should be removed. If the cooler interior exhibits visible contamination or odors it should be decontaminated in accordance with NHH-G-03 – Equipment Decontamination prior to use.
 - 5.1.5** The Field Task Manager or designee will notify the laboratory(ies) of the number, type and approximate collection and shipment dates for the samples in advance of any sample transfers and communicate any delays. The laboratory(ies) will provide courier service for all sample shipments.
- 5.2** Sample packaging and shipping will be done in accordance with applicable regulations, as described below:
- 5.2.1** After filling a sample container, affix cap. For sediment/solids containers, secure the cap with clear tape; the use of plastic tape to secure the cap is not required for aqueous containers. Complete the sample label. Apply the label to the sample container and cover with clear tape.
 - 5.2.2** Clean the outside of each sample container by wiping it off with a clean paper towel. Verify that residual sediment has been removed from the outside of the container, and from the area under and around the cap.
 - 5.2.3** Place each glass sample bottle into an individual bubble bag sleeve provided by the lab or wrap each glass bottle/jar individually using bubble wrap secured with tape or rubber bands
 - 5.2.4** Seal each sample container inside a sealable plastic bag.
 - 5.2.5** For those samples that require thermal preservation, place on ice or similar chilling source immediately after collection.
 - 5.2.6** Place plastic bubble wrap matting in the bottom of each cooler or shipping container as needed.

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- 5.2.7** Transfer the samples to the plastic-lined cooler. Place bottles upright into the cooler. If a combination of plastic and glass sample containers are to be packed, alternate them within the cooler to further protect the glass. Use inert packaging material (e.g., cardboard, etc.) to cushion the samples and minimize the potential for breakage by placing additional packing material throughout the voids between sample containers and between any layers within each cooler to a level which meets the approximate top of the sample containers. Packing material may require tamping by hand to reduce the potential for settling. Seal the drains on the ice chest (if present) with shipping tape or plug the drains with silicone sealant or a similar inert substance.
- 5.2.8** Conduct an inventory of sample numbers, fractions and containers when placing samples into the coolers, and check the inventory against the corresponding COC form before sealing the cooler (SOP NHH-G-04 – Sample Custody).
- 5.2.9** For those samples requiring thermal preservation, ice or similar chilling sources sufficient to maintain a temperature of $4^{\circ} \pm 2^{\circ}$ Celsius ($^{\circ}\text{C}$) will be placed inside the cooler during transport. Double bag cubed ice in heavy duty Ziploc type plastic bags to prevent leakage, close the bags, and distribute the packages in a layer over the top of the samples. If sample bottles are bubble wrapped, it is also permissible to insert double bagged ice packages between the sample bottles. Never place un-bagged loose ice directly into a cooler. Use sufficient ice to accommodate reasonable delays in shipment. A temperature blank provided by the analytical laboratory with each cooler will be included in the shipment.
- 5.2.10** Obtain two custody seals and enter the seal numbers on the COC form. Complete sample tracking documentation as described in SOP NHH-G-04 (Sample Custody), and place the documents in a sealable plastic bag inside the ice chest, taped to the inside of the lid.
- 5.2.11** Secure chest lid with shipping tape by covering the entire seal with tape. Sign and date the two custody seals, affix the custody seals on opposing corners of the cooler lid and cover the seals with clear plastic tape.
- 5.2.12** Repeat the above steps for each cooler or shipping container. If more than one cooler is being delivered to a laboratory, mark each cooler as “1 of 2”, “2 of 2”, etc.
- 5.2.13** Transport the shipping container directly to the laboratory or the laboratory courier. Samples will be shipped by close of the same day, whenever possible.

6.0 Quality Assurance/Quality Control

- 6.1** Completed COCs will be reviewed by the individuals preparing the samples for shipment for completeness, accuracy, and legibility. Specifically, the samples and COC record will be

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compared to ensure agreement between the sample labels and the COC, and to verify the number of sample containers.

- 6.2** The laboratory will notify the Project Chemist within 24 hours of receipt in the event that samples are received broken, that there are sample preservation concerns or holding time exceedances, or there are discrepancies between the custody paperwork and the sample containers.
- 6.3** The procedures and records associated with sample packaging and shipping are subjected to periodic inspection and review by the Field Task Manager to verify adherence to the procedures outlined in this SOP.

7.0 Data and Records Management

- 7.1** The records associated with the shipment process (COC records, etc.) will be maintained in an organized and contained manner.
- 7.2** COC records will be distributed to the appropriate personnel as described in the Work plan (AECOM 2017b).
- 7.3** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A formal nonconformance report (NCR) will be completed (refer to SOP NHH-G-01 – Field Records) and distributed as specified in the workplan (AECOM 2017b).

8.0 Personnel qualifications and training

Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017a], workplan [AECOM 2017b]). No specialized training is required; however, execution of these activities will initially be supervised by more experienced personnel.

9.0 References

AECOM 2017a. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven,

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Date: August 2017
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Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

10.0 Revision History

Revision	Date	Changes
0	August 2017	NA

Standard Operating Procedure

Sediment Grab Sampling

Procedure Number: NHH-S-01

Revision No.: 0

Revision Date: August 2017

Originally Prepared by

Rachel MacPhee

Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

Standard Operating Procedure Sediment Grab Sampling

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Revision: 0
Date: August 2017
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Attachment 1 Example of Grab Collection Form

Attachment 2 Equipment Rinsate Blank Collection Procedure

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1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for collecting sediment grab samples using a grab sampler deployed from a boat or other sampling platform as part of the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Surface sediment samples will be collected for a variety of chemical, physical, and biological parameters. Grab samplers intended for use on the FNP project include Van Veen grab samplers (including Ted Young modified), power grab samplers and a box corer. This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to collect grab samples. Specific information regarding grab sampling can be found in the associated workplan (AECOM 2017a). This SOP is based on United States Environmental Protection Agency (USEPA) guidance document Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual (USEPA, 2001).
- 1.2** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted based on field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by Project Quality Assurance (QA) Manager and the Task Manager. Deviations from this SOP will be documented in the field records and on a field corrective action form (SOP NHH-G-01 – Field Records) including the reason for the deviation(s). The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017b),
- 2.2** The health and safety considerations for the work associated with grab sampling include:
- The physical hazards of handling heavy equipment,
 - Pinch hazards associated with the grab or box core sampler,
 - Overhead lifting hazards using boat based winches and A-frames,
 - Marine safety aspects of the program, and

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- The specific chemical hazards related to the sediments.

2.3 Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. Weather conditions are often part of these discussions. As detailed in the APP (AECOM 2017b, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

Grab sampler collection issues generally include mechanical failures, over penetration, or surface sediment loss. Each of these will affect the quality/representativeness of the resulting data. Any sampler that did not trigger properly, or did not completely close will be rejected. Samplers that are either over-filled or appear to have lost surface fines will also be rejected. These details are further discussed in Section 5 (Procedures).

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Coring/sampling vessel, including the necessary navigational, communication, and grab deployment equipment;
- Marine VHF radio;
- Van Veen (or Ted Young modified Van Veen) grab sampler;
- Stainless-steel power grab sampler with pneumatic ram and stainless steel guide;
- Box corer;
- Stand (cradle) on which to place the grab or box core while not in deployment;
- Siphon tubing and bucket or pipette;
- Source of running water (optional);
- Water pump and hoses (optional);
- First aid kit and personal protective equipment (PPE) (refer to APP [AECOM 2017b]);

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- Approved plans, including target sampling locations;
- Sample containers (refer to workplan [AECOM 2017a]);
- Stainless steel bowls/trays and spoons/spatulas (or equivalent);
- Insulated coolers with wet ice;
- Sample labels;
- Waterproof paper and pen;
- Field notebook, Grab Collection Form, and other standardized forms (as needed);
- Ruler and tape measure;
- Digital camera (optional);
- Chain-of-custody forms and seals;
- Decontamination supplies (refer to SOP NHH-G-03 – Equipment Decontamination).

5.0 Procedures

This section gives the step-by-step procedures for collecting grab samples using a grab sampler (Van Veen, Ted Young modified Van Veen, or power grab) or box corer. Observations made during sediment grab sample collection will be recorded on the Grab Collection Form (Attachment 1), and/or a logbook (SOP NHH-G-01 - Field Records).

5.1 Equipment decontamination

The grab sampler or box corer, stainless steel bowls/containers, and stainless steel spoons/spatulas will be cleaned prior to initial use and between each station following the procedures in SOP NHH-G-03 and documented in the field notebook. A sufficient supply of pre-decontaminated small equipment will be mobilized to the sampling locations to minimize the need for performing field decontamination. Larger equipment, such as grab or box core, will however require field decontamination on the vessel between sampling stations. Note: grabs or box corers will not require decontamination between deployments at the same station; only between sampling stations, unless sticky or tar-like materials are encountered.

5.2 Equipment rinsate blanks

Equipment rinsate blanks will be collected at the frequency specified in the workplan (AECOM 2017a) after the sampling gear is decontaminated. The procedure for collecting equipment rinsate blanks and related sample containerization requirements are detailed in Attachment 2.

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5.3 Positioning

- 5.3.1** The sediment sampling schedule for the day will be established prior to vessel departure, and sufficient equipment to complete the work will be on-board the sampling/coring vessel. Grab samples are anticipated to be collected adjacent to core collection locations.
- 5.3.2** The sampling/coring vessel will move to a grab/coring location in accordance with SOP NHH-G-02 (Navigation Positioning).

5.4 Sampling preparation

The associated workplan summarize the parameters that require collection at each station, and list the sample mass, container type, preservatives, and storage conditions required for each sample.

5.5 Sampler Deployment and Retrieval

- 5.5.1** Don PPE as required by the APP (AECOM 2017b).
- 5.5.2** Attach the sampler (grab sampler or box corer) to the end of the winch cable with a shackle and tighten the pin.
- 5.5.3** Attach any needed weights to achieve the needed penetration or pads (boards) for stabilization. Arm the grab/box corer.
- 5.5.4** Lower the sampler through the water column until the cable slackens. Nearing the bottom travel time will not exceed 1 m/sec to minimize bow wave disturbance. Record the station location (HYPACK system) and water depth (echo sounder or weighted line) on the Grab Collection Form (Attachment 1).
- 5.5.5** Retrieve the sampler and place it on the stand.
- 5.5.6** Open the sampler and examine it for acceptability:
- The sediment surface should be basically level and intact over the surface area of the grab, with no sign of channeling or sample washout
 - Penetration depth should be sufficient (as measured from the center of the grab) to meet the project requirements
 - The jaws of the sampler should be tightly closed and water should not be substantially leaking from the sampler

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- The surface appears intact (shell hash or coarse material visible on the surface is acceptable as long as the first two criteria are met and the jaws of the grab are tightly closed and not leaking).
- Grabs that are only partially filled, or obviously slumped or pitched due to the sampler hitting at an angle are not considered acceptable. In addition, sediments should not be in contact with the underside of the sampler access doors. Drain overlying water from the sampler (by siphoning, not decanting) until only a thin film remains.

5.5.7 Describe the sample surface (color, texture, odor, etc.) on the Grab Collection Form (Attachment 1); continue to describe the sample during sample processing.

5.5.8 Collect the sample as described below. Future deployments will be adjusted for local sediment conditions by either adding/removing weight or pads to the grab frame to control the penetration depth.

5.5.9 Repeat steps 5.5.4 through 5.5.9 until sufficient grab samples are collected to meet the sample volume requirements for the full set of parameters as specified in the workplan. Care will be taken to ensure that the precise collection interval/horizon specified in the corresponding workplan is collected. Slight adjustments/relocation of the vessel on-station between sampler deployments will be performed according to SOP NHH-G-02.

5.6 Shipboard sample collection

5.6.1 Siphon off the overlying water (or remove via pipette) to the sediment/water interface without substantially disturbing the soft surface sediment. This will be performed by gently allowing the water to drain to one corner of the sampler for siphoning-off.

5.6.2 Sediment to be homogenized (for non-discrete sample parameters) will be placed in a covered plastic bucket (e.g., 3 ½ gallon bucket) provided by the laboratory.

5.6.3 Store the sample containers in an insulated cooler containing wet ice to keep samples cold while on the vessel until they can be transported to shore for further processing or shipment to the corresponding analytical laboratory as described in SOP NHH-G-05 (Sample Packaging and Shipping).

5.6.4 Clean the grab sampler or box corer in accordance with the procedures in SOP NHH-G-03 between stations.

6.0 Quality Assurance/Quality Control

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- 6.1** Completing the Grab Collection Form (Attachment 1) will document that the process is being followed and that pertinent information is being collected and recorded in accordance with the procedures outlined in this SOP.
- 6.2** Entries on the forms and in the field logbook will be double-checked by the samplers to verify the information is correct. Completed forms and field logbook will be reviewed periodically by the Field Task Manager to verify that the requirements are being met.
- 6.3** The workplan (AECOM 2017a) has been prepared to collect representative samples within the NHH per the SOW (NAE 2017). High sediment moisture content, which can impact the achievable reporting/detection limits and sample representativeness, will be evaluated. Samples collected with a high water content will be discussed with the Field Task Manager to evaluate the need to collect added sample or to take added action that would reduce the water content (e.g., allowing the sediment slurry to settle in a bucket followed by siphoning the overlying water).
- 6.4** Data quality evaluations will be based on quality control (QC) sample results. QC samples may include field duplicates and equipment rinsate blanks; collection requirements are tabulated in the associated workplan (AECOM 2017a).
- 6.5** The workplan (AECOM 2017a) lists the proper sediment sample containerization, preservation, and storage conditions required to maintain sample integrity.

7.0 Data and Records Management

- 7.1** Field notes will be kept during sampling activities in accordance with SOP NHH-G-01 - Field Records.
- 7.2** Field data will be distributed to the appropriate personnel as described in the workplan (AECOM 2017a).
- 7.3** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and reported on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A field corrective action form, including reason and impact on the program, will be submitted to the Task Manager and Project QA Manager for approval.

8.0 Personnel Qualifications and Training

- 8.1** Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017b], workplan [AECOM

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2017a)). Inexperienced personnel performing these activities will be initially supervised by the Field Task Manager or his/her designee.

9.0 References

AECOM 2017a. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

USEPA 2001. Methods for Collection, Storage and Chemical Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. United States Environmental Protection Agency, Office of Water. EPA-823-B-01-002. October 2001.

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10.0 Revision History

Revision	Date	Changes
0	August 2017	NA

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Attachment 1

Example of Grab Collection Form

Sediment Grab Collection Record										AECOM	
Location ID		Date		Project #							
Sampler		Contractor		Vessel							
Weather											
Sampling Equipment		Ted Young Box Core				Diameter in					
Target Northing		Easting		NAD83 StatePlane, East							
Grab Number		Time 24hr		Water Depth ft		# Attempts					
Actual Northing		Easting		Distance from target ft							
Target Penetration Depth ft		Actual Penetration Depth ft		Recovered Length ft		Recovery %					
RPD cm		Texture all		Clay Clay+Silt Silt Silt+Sand Sand Sand+Gravel Gravel							
PID ppm		H2S ppm		Color		Black Dark Gray Light Gray Brown Tan Green					
Debris Yes No		Oil sheen Yes No		Visible biology		Yes No					
Grab Number		Time 24hr		Water Depth ft		# Attempts					
Actual Northing		Easting		Distance from target ft							
Target Penetration Depth ft		Actual Penetration Depth ft		Recovered Length ft		Recovery %					
RPD cm		Texture all		Clay Clay+Silt Silt Silt+Sand Sand Sand+Gravel Gravel							
PID ppm		H2S ppm		Color		Black Dark Gray Light Gray Brown Tan Green					
Debris Yes No		Oil sheen Yes No		Visible biology		Yes No					
Grab Number		Time 24hr		Water Depth ft		# Attempts					
Actual Northing		Easting		Distance from target ft							
Target Penetration Depth ft		Actual Penetration Depth ft		Recovered Length ft		Recovery %					
RPD cm		Texture all		Clay Clay+Silt Silt Silt+Sand Sand Sand+Gravel Gravel							
PID ppm		H2S ppm		Color		Black Dark Gray Light Gray Brown Tan Green					
Debris Yes No		Oil sheen Yes No		Visible biology		Yes No					

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Attachment 2

Equipment Rinsate Blank Collection Procedure

1. Decontaminate the sample handling equipment (e.g., grab, box corer, utensils and basins/bowls) according to the procedures detailed in SOP NHH-G-03 – Equipment Decontamination.
2. Rinse the utensils with de-ionized water (DIW), collect the rinse water in the decontaminated basin/bowl, and pour it into laboratory-provided containers. Note that equipment rinsate blanks for dioxins/furans will substitute hexane for the DIW. Sample volume, container type, preservatives, and storage details are provided in the workplan (AECOM 2017a). QC sample blank containers will be pre-preserved by the laboratory that provides them. Note: equipment blanks may not be appropriate for each parameter
3. Label each container with the sample ID, date and time of collection, and the analytical parameters, cover the label with clear packing tape and fill out the custody form (refer to SOP NHH-G-04 – Sample Custody).
4. Store the samples in a cooler on ice until they are transported to the field facility, under the Field Custody and Transfer Form (refer to SOP NHH-G-04 – Sample Custody), for shipment to the corresponding analytical laboratory following SOP NHH-G-05 – Sample Packaging and Shipping.

Standard Operating Procedure

Sediment Coring Using a Vibracorer

Procedure Number: NHH-S-02

Revision No.: 0

Revision Date: August 2017

Originally Prepared by

Rachel MacPhee

Ryan McCarthy,
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

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Attachment 1 Example of Sediment Core Collection Record

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1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for collecting cores using a vibracoring device as part of the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to collect cores using a vibracore. Specific information regarding coring can be found in the associated workplan (AECOM 2017a).
- 1.2** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and will be communicated to the NAE Project Manager. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the sampling event or the field activity.

2.0 Health and Safety Considerations

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017b).
- 2.2** The health and safety considerations for the work associated with vibracoring include:
- The physical hazards of handling heavy equipment;
 - Overhead lifting hazards using boat based winches and A-frames;
 - Marine safety aspects of the program;
 - The specific chemical hazards related to the sediments; and
 - Sharp edges of cut polycarbonate vibracore liners.
- 2.3** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. Weather conditions are often part of these discussions. As detailed in the APP (AECOM 2017b), everyone on the field team has the authority to stop

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work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

- 3.1** In some cases, the addition of a piston to the corer may be appropriate and in all cases field personnel should continually monitor the core progression and ensure that the core sample is not vibrated excessively if the downward progression has ceased.
- 3.2** Common interferences encountered during core driving are listed below:

Interference	Possible Effect	Action Taken to Minimize Effect
Vibratory action	Consolidate/compact sediment during driving	Vibrate only as needed to advance the tube; use of a piston to improve recovery; establish minimum acceptance criteria
Loss of material out bottom	Less drive length achieved; gaps in retained sediment	Use core catcher
Blocking	Material doesn't enter core tube or lessens recovery	Move off station and re-drive; establish minimum acceptance criteria
Angled entry	Drive length less than expected and fore-shortened	Make sure that wire line is vertical during core driving
GPS satellite accuracy is low	Less confidence in station location	Wait until DGPS accuracy returns to acceptable limits and resume or use a buoy marker or land-survey techniques to confirm sample location. See SOP NHH-G-02 – Navigation/Positioning.

4.0 Equipment and materials

The following equipment list contains materials which may be needed in carrying out the procedures outlined in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Personal protective equipment (PPE) and other safety equipment, as required by the APP (AECOM 2017b);
- First aid kit;
- Navigation charts and Core Locations figure;
- Sampling vessel adequate for task at hand and river conditions;

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- Marine VHF radio;
- Positioning equipment;
- Vibracoring device;
- Deployment equipment (e.g., A-frames, winches, generator);
- Decontaminated polycarbonate vibracore liners;
- Stainless steel core cutter/catcher;
- Hacksaw;
- Tubing cutter;
- Decontaminated hacksaw blades;
- Decontaminated drill bits and/or Unibits;
- Drill;
- Daily Activity Log (provided in SOP NHH-G-01 – Field Records);
- Sediment Core Collection Record (example provided in Attachment 1);
- Core storage racks to hold cores vertical and cold during temporary storage on-board coring vessel;
- Assorted nautical equipment (e.g., anchors, lines, personal flotation devices [PFDs]);
- Waterproof logbooks, pens, and labels;
- Permanent marker or grease pencil;
- Echo sounder with a resolution of 0.1 foot;
- Weighted line or survey rod, with graduations of 0.1 foot;
- Depth measuring plate;
- Tape measure and ruler;
- Submersible pump and hose;
- Decontaminated core tube caps;
- Electrical tape, duct tape, PVC pipe tape, or “Gorilla” brand tape;
- Camera;
- Stainless steel spoon/ utensils;
- Five gallon buckets; and
- Decontamination equipment/supplies (refer to SOP NHH-G-03 – Equipment Decontamination).

5.0 Procedures

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Cores will be collected using a vibracoring device. Following collection, cores will be processed using on-board core processing station. Core processing procedures are described in SOP NHH-S-04 – Sediment Core Processing.

5.1 Sampling procedures

This section gives the step-by-step procedures for collecting cores using a vibracore. Observations made during sediment core collection should be recorded on the Sediment Core Collection Record (Attachment 1).

5.1.1 Decontamination of equipment

Decontamination of the polycarbonate core liners, core caps, stainless steel core cutter/catcher, hacksaw blades, drill bits, and assemblies will be performed prior to vessel departure in accordance with procedures outlined in SOP NHH-G-03 – Equipment Decontamination. A sufficient amount of decontamination equipment and supplies will be brought on the coring vessel to accommodate the need for miscellaneous, unforeseen decontamination. The hacksaw blade used to cut the core will be decontaminated between each segment following the Level III decontamination protocol as detailed in SOP NHH-G-03 – Equipment Decontamination.

5.1.2 Locating coring position

1. The coring schedule for the day will be established prior to vessel departure, and sufficient equipment to complete the work will be on board the sampling vessel. The coring crew will be informed prior to departure of the coring locations and the number of cores required at each location. The number of cores to be recovered at each location will be determined by the sample volume requirements of the project analytical program.
2. The vibracoring vessel will be positioned at a coring location in accordance with SOP NHH-G-02 - Navigation / Positioning. Upon collection of a sample, the actual sampling site will be documented by a DGPS unit or by a physical measurement from a fixed feature if satellite reception cannot be acquired.

5.1.3 Collection of core samples (boat based)

1. Initiate the Sediment Core Collection Record (Attachment 1).
2. Don PPE as required by the APP (AECOM 2017b).
3. Activate the submersible pump in preparation for cleaning the vibracore and coring tube, upon retrieval.
4. Slowly winch the vibracore into its deployment orientation.

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6. Obtain water depth (to nearest 0.1 foot) from the echo sounder or via deployment of a weighted line or survey rod with graduations of 0.1 foot. Record on the Sediment Core Collection Record (Attachment 1).
7. Confirm the water depth with the depth in the work plan (AECOM 2017a). If the overlying water depth differs, the project depth and core depth may need to be adjusted. Upon consultation with NAE and the Task Order Manager, adjust depth if necessary and record in the log book and using a field corrective action form (NHH-G-01 – Field Records).
8. Slowly lower the vibracore into the water using the winch or other deployment equipment. Slowly lower the vibracore through the water column to the sediment surface using the water depth reading.
9. Record the “zero” mark on the winch cable.
10. Turn motor of vibracorer on. Slowly lower vibracore into sediment to penetrate the sediment to the workplan-specified target depth (AECOM 2017a), adjusted target depth (see step 7) or refusal. Record the start time on the Sediment Core Collection Record (Attachment 1).
11. Lower vibracore approximately 1 foot more to obtain a “plug” at the bottom of the core (i.e., to minimize loss of sediment from core). Record the end time on the Sediment Core Collection Record (Attachment 1).
12. On completion of the required penetration, or upon vibracore refusal, de-energize the vibracore and allow the core to stabilize for a period of 15 minutes. Record the vibracore penetration depth on the Sediment Core Collection Record (Attachment 1).
13. Record the final core location coordinates on the Sediment Core Collection Record (Attachment 1).
14. Slowly raise the vibracore, while maintaining the core in a vertical position, as field conditions allow.
15. Bring vibracore to sampling vessel deck while maintaining the core in a vertical position. Remove core cutter and core catcher, replace with cap, and secure cap with electrical tape (or equivalent).
16. Clean the vibracore barrel and coring assembly by hosing down the equipment with site water as described in SOP NHH-G-03 – Equipment Decontamination.

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17. Remove the core tube from the vibracore barrel and place a cap on bottom of the coring tube, keeping the core tube in an upright position, as field conditions allow.
18. Return the vibracore device to its onboard, deck storage location.
19. Clean the core tube by hosing it down with river water. Care should be taken not to direct water into the open end of the core tube.
20. Evaluate whether core penetration and recovery are acceptable using the procedures outlined in Sections 5.1.5 and 5.1.6, respectively.
21. Keeping the core tube upright, as field conditions allow, use a hacksaw with a decontaminated blade or drill with a decontaminated drill bit to make a cut/hole in the core tube approximately 1 to 2 inches above the sediment/water interface and allow the excess water to drain out.
22. Cap the cut end of the tube with decontaminated core cap, secure cap with electrical tape (or equivalent), and draw an arrow toward the cap. Draw an arrow on the coring tube with permanent marker and label "top" to indicate the top of the core. Label the core with the location ID, date, and time, and record this information on the Sediment Core Collection Record (Attachment 1).
23. Mark the side of the core to indicate the sediment-water interface. Measure the recovered length of the sediment in the core tube (to the nearest 0.1 foot to the extent possible) and record it on the Sediment Core Collection Record (Attachment 1). The distance between the top of the sediment in the coring tube and the bottom of the coring tube corresponds to the recovered length. Apparent gaps should be noted on the Sediment Core Collection Record (Attachment 1) and the length and location(s) of the gap(s) should be noted. The total gap length will be subtracted from the total recovery length.
24. Store the core vertically in a core storage rack (capable of keeping cores cold) while on the vessel, until it can be processed. Longer cores (e.g., archeology) will be segmented on the vessel to allow for storage and transportation. Cut these cores at the location of a planned sample segmentation using a hacksaw with a decontaminated blade and recap the exposed ends. Add appropriate markings to indicate the location and unique identification of each segment. (Segments will be identified as AB, BC, CD, etc., with the first letter marked just below the upper cut, and the second letter marked just above the lower cut).

5.1.4 Procedures for determining acceptable core penetration

1. Calculate penetration percentage using the following equation:

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$$\text{Penetration (\%)} = \frac{\text{actual penetration (feet)}}{\text{target penetration (feet)}} \times 100$$

2. Actual penetration is the depth advanced into the sediment not including the depth advanced to form a plug.
3. Record penetration percentage or penetration start and end depths in the field logbook.
4. If penetration is $\geq 80\%$, then penetration is acceptable. Proceed to Section 5.1.6, Procedures for Determining Acceptable Core Recovery.
5. If penetration is $< 80\%$, then (a) retain core and (b) record on the Sediment Core Collection Record (Attachment 1) if due to refusal or to encountering the red-brown sand or clay. Record additional penetration notes at the Remarks section of the Sediment Core Collection Record (Attachment 1). Adjust the vessel location slightly prior to next sampling attempt in accordance with SOP NHH-G-02 – Navigation/Positioning and project-specific location acceptance criteria in the workplan (AECOM 2017a). Upon three unsuccessful attempts to obtain $> 80\%$ penetration, contact the Field Task Manager to determine if additional cores should be attempted (Section 5.1.6.4, below). Proceed to Section 5.1.6, Procedures for determining acceptable core recovery, below.

5.1.5 Procedures for determining acceptable core recovery

1. Calculate recovery percentage by the following equation:

$$\text{Recovery (\%)} = \frac{\text{recovery (feet)} - \text{gaps (feet)}}{\text{actual penetration (feet)}} \times 100$$

2. Record recovery percentage or recovery length on the in the field logbook.
3. If recovery is $\geq 80\%$, then recovery is acceptable, provided that the core reached refusal or the workplan-specified target depth (AECOM 2017a). Continue processing the core, then move to a new core location in accordance with SOP NHH-G-02 – Navigation/Positioning and project specific target location acceptance criteria. Proceed to Step 2 of Sections 5.1.3 and 5.1.4 for collection of second core. If the recovery $< 80\%$, proceed to Step 4.
4. If recovery is $< 80\%$, then (a) retain core and clearly mark on core cap that recovery is $< 80\%$, and (b) adjust vessel location in accordance with SOP NHH-G-02 – Navigation/Positioning. Upon three unsuccessful attempts to obtain $> 80\%$ recovery, contact the Field Task Manager to determine if additional cores should be attempted and consult with the NAE Project Manager. The vessel will proceed to the next station. Record all attempts on

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the Sediment Core Collection Record (Attachment 1). Communications with the Field Task Manager will be documented in the field logbook. Failure to collect a core at a specified location will be recorded on the Daily Activity Log (provided in SOP NHH-G-01 – Field Records).

5. Upon collection of acceptable core(s) proceed to Section 5.1.7, Management of cores, below.

5.1.6 Management of cores

1. Containerize excess sediment on the vessel. The field crew will make reasonable attempts to containerize “gross” sediment material produced from coring. Sediment residuals generated from rinsing operations will not be included in such containerization.
2. Verify that the lengths of the core tubes, water depth, and positioning data have been recorded on the Sediment Core Collection Record (Attachment 1).
3. Prior to transit to the next coring location or return to the marina, decontaminate the coring equipment and sampling vessel as described in SOP NHH-G-02 – Equipment Decontamination.
4. Upon completion at a location or transect, the containerized excess sediment may be disposed of overboard prior to moving station.
5. Proceed to next core location specified for that day and repeat above procedures.

6.0 Quality assurance / quality control

- 6.1 Completing the Sediment Core Collection Record (Attachment 1) will document that the process is being followed and that pertinent information is being collected and recorded in accordance with the procedures outlined in this SOP.
- 6.2 Entries on the forms and in the field logbook will be double-checked by the samplers to verify the information is correct. Completed forms will be reviewed periodically by the Field Task Manager his/her designee to verify that the requirements are being met.

7.0 Data and records management

- 7.1 Field notes will be kept during coring activities in accordance with SOP NHH-G-01 – Field Records. The information pertinent to coring activities includes chronology of events, sample

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locations (x,y,z), time/date, sampler name, methods (including type of core liner/barrel, if applicable), sampler penetration and acceptability, sample observations, and the times and type of equipment decontamination. This information will be recorded in the field logbook or Sediment Core Collection Record (Attachment 1), as appropriate.

- 7.2** Field data will be distributed to the appropriate personnel as described in the workplan (AECOM 2017a).
- 7.3** Deviations to the procedures detailed in the SOP should be recorded in the field logbook at the time of occurrence and reported on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A formal nonconformance record, including reason and impact on the program, will be submitted to the Task Manager and Project QA Manager for approval.
- 7.4** All records associated with the activities described in this SOP will be ultimately maintained in accordance with the workplan (AECOM 2017a).

8.0 Personnel qualifications and training

- 8.1** The individuals executing these procedures will have read, and be familiar with, the requirements of this SOP and the corresponding workplan (AECOM 2017a). Actual vibracoring operations will be conducted only by personnel experienced with the equipment, but subsequent manipulations, measurements, cutting and labeling procedures are relatively simple and can be implemented by personnel without specialized training. It is recommended that initial core manipulations and handling activities be supervised by more experienced personnel.
- 8.2** Sampling personnel will also be health and safety trained and certified as specified in the APP (AECOM 2017b).

9.0 References

AECOM 2017a. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

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10.0 Revision history

Revision	Date	Changes
0	August 2017	NA

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Attachment 1 Example of Sediment Core Collection Record

Sediment Core Collection Record

AECOM

Location ID

Date

Project #

Sampler

Contractor

Vessel

Weather

Sampling Equipment

Diameter in

Target Northing

Easting

NJ NAD83 Stateplane Feet

Core Number

Time 24hr

Water Depth ft

Actual Northing

Easting

Distance from target ft

Target Penetration Depth ft

Actual Penetration Depth ft

Recovered Length ft

Recovery %

Remark

Segment	Length in	Description
A – B		
B – C		
C – D		
D – E		
E – F		
F – G		
G – H		

Core Number

Time 24hr

Water Depth ft

Actual Northing

Easting

Distance from target ft

Target Penetration Depth ft

Actual Penetration Depth ft

Recovered Length ft

Recovery %

Remark

Segment	Length in	Description
A – B		
B – C		
C – D		
D – E		
E – F		
F – G		
G – H		

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Core Processing

Procedure Number: NHH-S-03

Revision No.: 0

Revision Date: August 2017

Originally Prepared by

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Date: _____

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Date: _____

Annual review of this SOP has been performed
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Attachment 1 Equipment Rinsate Blank Collection Procedure

Attachment 2 Example of Field Coring Log

Standard Operating Procedure Core Processing

1.0 Scope and Applicability

- 1.1** The purpose of this document is to define the standard operating procedure (SOP) for processing of sediment cores collected as part of the New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). This processing procedure applies to sediment cores collected using a variety of samplers, including vibracore, push or gravity cores. Core processing includes logging of cores, and the collection of samples for geotechnical, chemical, or other analyses. Core processing will be conducted to meet the sample collection and analysis objectives defined in the associated workplan (AECOM 2017a).
- 1.2** It is fully expected that the procedures outlined in this SOP will be followed by the field team. Procedural modifications may be warranted depending upon field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and the Task Manager and will be communicated to the NAE Project Manager. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the sampling event or the field activity.

2.0 Health and Safety Considerations

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP) (AECOM 2017b).
- 2.2** Daily safety briefs should be conducted at the start of each working day before any work commences. These daily briefs should be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the APP (AECOM 2017b), everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

- 3.1** Potential bias/interference related to sediment core processing may be introduced if the sediment/water interface is not properly maintained (i.e., keeping sediment cores vertical and

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decanting overlying water to avoid surface sediment mixing). Interference may be introduced if sediment has fallen out of the bottom creating spatial gaps in the core stratigraphy. If the core was not advanced vertically, angled contacts may be observed in the core tube.

- 3.2** High sediment moisture content, which can impact the achievable reporting/detection limits and sample representativeness, should be evaluated. Samples collected with very high water content should be discussed with the Field Task Manager to evaluate the need to collect added cores, allow cores to settle, or prioritize the subsampling effort.
- 3.3** Inadequate or improper homogenization of the sediment material may result in samples that are non-representative and/or biased.

Interference	Possible Effect	Action Taken to Minimize Effect
Mixing of sediment/water interface	Inaccurate depth reading and chemical mixing	Stand core tube vertically and let suspended material settle then siphon or drain overlying water
Poor homogenization	Biased physical and chemical results	Mix material in bowl until uniform texture and color
Core not driven vertically or on slope	Angled stratigraphy and contacts	Note visual observations and sample along contacts

- 3.4** Cross contamination of samples may result if sample handling equipment is inadequately or improperly decontaminated. Refer to SOP NHH-G-03 – Equipment Decontamination for decontamination procedures.
- 3.5** Contamination of samples may also result if samples are exposed to certain environmental conditions. Core processing will be conducted in a dedicated area on the vessel. Exposure to potential sources of contamination (e.g., exhaust fumes) will be minimized.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- Core cutting table;
- Vertical core stand and containment basin;

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- Fine-gauge stainless steel wire;
- Hacksaw with spare decontaminated blades and case knives;
- Core cutting tool (electric sheet metal shears, router, circular saw, or similar tool, with spares);
- Lithology and Sample Collection Records (data may be collected via hardcopy or electronically; hardcopy examples are provided as Attachment 3);
- Grease pencil/pens;
- Decontamination supplies (refer to SOP NHH-G-03 – Equipment Decontamination);
- Stainless steel bowls/pans and utensils;
- Electric drill;
- Stainless steel dividing blades/knives;
- Aluminum foil, plasticized bench sheeting (white) and marker pens;
- Ruler and tape measure;
- Stadia rod;
- First aid kit and personal protective equipment (PPE) (refer to the APP [AECOM 2017b]);
- Pre-labeled sample bottles for the analyses specified in the workplan (AECOM 2017a);
- Pre-labeled and pre-preserved sample bottles for equipment rinsate samples (see Equipment Rinsate Blank Collection Procedure in Attachment 1);
- Sample processing table (ventilated area);
- Custody forms (refer to SOP NHH-G-04 – Sample Custody);
- Refrigerator and freezer;
- Digital cameras;
- Unified Soil Classification System (USCS) Charts; and
- Core storage rack to hold cores vertical and keep cold prior to either processing or placement in a refrigerator.

5.0 Procedures

The core processing procedure presented in this SOP is a multi-step process. Field samples will be collected in rigid plastic liners and stored vertically to allow fine grained materials to settle out of the overlying water.

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Cores will be inspected visually, logged and photographed, and samples will be collected and submitted for geotechnical, chemical, and physical analyses, as required by the workplan (AECOM 2017a).

5.1 Equipment decontamination

5.1.1 Decontamination of equipment prior to contact with sediment will be performed in a designated decontamination area. The decontamination will be performed in accordance with procedures outlined in SOP NHH-G-03 – Equipment Decontamination. The sample handling equipment (i.e., stainless steel bowls/containers, spoons/spatulas) will be decontaminated between segments following the procedures in SOP NHH-G-03 and documented in the field records. Core cutting equipment (hacksaw, cutting blades, stainless steel spatulas) will be decontaminated. Equipment decontamination will be conducted sufficiently ahead of the processing activities to allow for the implementation of proper procedures (including drying of decontaminated equipment).

5.1.2 Equipment rinsate blanks will be collected at the frequency specified in the workplan (AECOM 2017a). Procedures for collecting equipment rinsate blanks are included in Attachment 1.

5.2 Preliminary activities prior to core processing

5.2.1 Acquire the necessary sampling equipment (decontaminated stainless steel bowls, utensils), pre-labeled sampling containers, and hardcopy or electronic Sediment Core Collection Records prepared during the coring operations.

5.2.2 At the sample processing area on the boat, cores will be stored vertically prior to processing.

5.2.3 Dry the surface of the core tube with clean paper towels and measure the length of sediment in the core tube.

5.3 Core processing

5.3.1 Don PPE per the APP (AECOM 2017b) (including hearing and eye protection).

5.3.2 Transfer the core to the processing table and make two longitudinal cuts along the core tube using the core cutting table designed for that purpose. Cut the length of the core in two cuts at 180° from each other. Cutting will be performed using a small circular saw, router, electric sheet metal shears, or other appropriate tool. Complete the cut (as needed) using a heavy duty box cutter. Transfer the core intact onto the plasticized bench sheeting. Split the core into longitudinal halves using decontaminated stainless steel spatulas or other (e.g., wire). Open the tube lengthwise

Standard Operating Procedure

Core Processing

and carefully separate the core half-sections and place them on the plasticized bench sheeting.

- 5.3.3** Visually describe the core in the Field Coring Log (Attachment 2). Using the Unified Soil Classification System (USCS) Charts, record the description of the sediment type in the appropriate section of the form and include the total core length, the presence of observable biota or organic matter, odor, and color.
- 5.3.4** Photograph the exposed section of the core in approximately one foot increments. Include a stadia rod for scale, and mark the top and bottom and ends of the core. If foreign objects or gaps are present, or unusual observations are made, photograph the object or subject of the observations. Make sure an adequate amount of light is available to photograph core and include a photograph ID label in the photograph. If core features are photographed, a scale should be provided, along with a label that indicates the core segment/depth in the sediment column. Maintain photographic records as specified in SOP NHH-G-01 – Field Records.
- 5.3.5** Determine sub-sample intervals for subsampling. Subsample each core (approximately two per core) for grainsize and chemical analysis per the workplan (AECOM 2017a).
- 5.3.6** Homogenize the sediment using the pre-cleaned utensils until there is uniformity in the color and texture. Sediment subsamples should be collected as indicated on the core processing form.
- 5.3.7** Transfer homogenized sediments to pre-labeled sample jars for grainsize and chemical analysis.
- 5.3.8** Place the samples in a secure refrigerated area (4°C) until the samples are transferred to the laboratory courier at the end of the day. Transfer the samples to the laboratory(ies) as described in SOPs NHH-G-05 – Sample Custody and NHH-G-06 – Packaging and Shipping.
- 5.3.9** The remaining material from each sub-section of core will be containerized (i.e., 5-gallon bucket), labeled, and stored cold (4°C) under chain of custody.

5.4 Core Collection

- 5.4.1** Once a composting scheme has been approved by NAE, additional sediment cores will be collected to obtain necessary sediment volume. These cores will not be processed but will be containerized directly into buckets per the compositing scheme.

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- 5.4.2** Additional cores for archaeological archive will be collected per the workplan (AECOM 2017a). These cores will be labeled, and maintained vertical, and stored cold (4°C) under chain of custody for transfer to NAE.

6.0 Quality Assurance/Quality Control

- 6.1** Completing the the Field Coring Log (Attachment 2) will document that the process is being followed and that pertinent information is being collected and recorded in accordance with the procedures outlined in this SOP.
- 6.2** Entries on the forms and in the field logbook will be double-checked by the samplers and sample processing personnel to verify the information is correct. Completed forms and field logbook will be reviewed periodically by the Field Task Manager or his/her designee to verify that the requirements are being met.
- 6.3** Data quality evaluations will be based on QC sample results. QC samples may include field duplicates and equipment rinsate blanks; collection requirements are tabulated in the associated workplan (AECOM 2017a).
- 6.4** The workplan (AECOM 2017a) lists the proper sediment sample containerization, preservation, and storage conditions.

7.0 Data and Records Management

- 7.1** Field notes (including photologging, if conducted) will be kept during sampling activities in accordance with SOP NHH-G-01 – Field Records. The form associated with this SOP (Attachment 2) will be filled out completely and accurately.
- 7.2** Deviations to the procedures detailed in the SOP should be recorded in the field logbook at the time of occurrence and included on the Daily Activity Log (refer to SOP NHH-G-01 – Field Records). A field corrective action form, including reason and impact on the program, will be submitted to the Task Manager and Project QA Manager for approval.

8.0 Personnel Qualifications and Training

Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding plans (e.g., APP [AECOM 2017b], workplan [AECOM

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2017a)). No specialized training is required; however, inexperienced personnel performing the tasks described in this SOP should be initially supervised by the Field Task Manager or his/her designee.

9.0 References

AECOM 2017a. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

10.0 Revision History

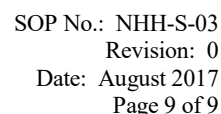
Revision	Date	Changes
0	August 2017	NA

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Attachment 1

Equipment Rinsate Blank Collection Procedure

1. Decontaminate the sample handling utensils and basins/bowls according to the procedures detailed in SOP NHH-G-03 – Equipment Decontamination.
2. Rinse the utensils with de-ionized water (DIW), collect the rinsewater in the decontaminated basin/bowl, and pour it into laboratory-provided containers. Sample volume, container type, preservatives, and storage details are provided in the workplan (AECOM 2017a). QC sample blank containers should be pre-preserved by the laboratory that provides them. Note: equipment blanks may not be appropriate for each parameter. Refer to the workplan (AECOM 2017a) for the parameters for which equipment rinsate blanks will be collected.
3. Label each container with the sample ID (refer to the corresponding workplan (AECOM 2017a) for the identification nomenclature), date and time of collection, and the analytical parameters, cover the label with clear packing tape and fill out the custody form (refer to SOP NHH-G-05 – Sample Custody).
4. Store the samples in a cooler on ice until they are packed for shipment to the corresponding analytical laboratory following SOP NHH-G-06 – Sample Packaging and Shipping.



Attachment 2

Location: New Haven FNP		Logged By:		Date/Time:	Core/Sample ID
Delivery Order No.:W912WJ17F0036				Vessel:	
Equipment (Circle One) Vibracore/Grab Sampler					
Coordinates:		X:	Y:		
Project Depth (ft):		Penetration:		Recovery:	No. Attempts:
Depth	Sketch	Description			
Comments/Photographic References:					



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Date: August 2017
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Standard Operating Procedure

Surface Water Sampling

Procedure Number: NHH-W-01

Revision No.: 0

Revision Date: August 2017

Prepared by

Rachel MacPhee

Reviewed by:

Ryan McCarthy
AECOM Task Order Manager

Date: _____

Debra L. Simmons
Project QA Manager

Date: _____

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

Standard Operating Procedure Surface Water Sampling

SOP No.: NHH-W-01
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Standard Operating Procedure Surface Water Sampling

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1.0 Scope and applicability

- 1.1** This project Standard Operating Procedure (SOP) defines the operating procedures for the collection of bulk and discrete water samples associated with New Haven Harbor Federal navigation project (FNP). This SOP has been developed in accordance with requirements in the United States Army Corps of Engineers New England District (NAE) Statement of Work (SOW) for the project (NAE, 2017). Water samples are collected either using a bottle-type sampler, or with the aid of a peristaltic (or other equivalent) water pump.
- 1.2** Samples will be collected using a pre-cleaned diaphragm pump and CFLEX™ (or equivalent) tubing system at the surface (three feet below the surface), at the mid depth, and near the sediment bottom (three feet above the sediment surface). If needed, a Niskin bottle may be utilized. Samples will be analyzed for chemical, biological and physical analyses. Water will also be collected for creation of elutriate samples at the laboratory per the workplan (AECOM 2017a). Analytes for a particular program are specified in the workplan (AECOM 2017a).
- 1.3** It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending upon field conditions or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project QA Manager and the Task Manager and communicated to the client. Deviations from this SOP will be documented in the field records.

2.0 Health and safety considerations

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical, and biological hazards are addressed in the site specific Accident Prevention Plan (APP; AECOM, 2017b). The major health and safety considerations for the work associated WQ data collections are the near and on-water safety aspects of the program.
- 2.2** Daily safety briefs are to be conducted at the start of each working day before any work commences. These daily briefs are to be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. Weather conditions are often part of these discussions. As detailed in the APP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

- 3.1** Cross-contaminations of samples may result if sample handling equipment is inadequately or improperly decontaminated.

Standard Operating Procedure Surface Water Sampling

- 3.2** Contamination of samples may result if samples are exposed to certain environmental conditions. Exposure to potential sources of contamination (e.g., exhaust fumes) will be minimized.
- 3.3** Care must be taken to avoid disturbing the bed sediment during sampling. Re-suspended bed sediments may contaminate/ artificially bias the surface water samples.
- 3.4** Inappropriate sampling equipment, such as that manufactured from non-inert plastics, may contaminate samples. Using Teflon, polymer, or stainless steel sampling equipment will minimize contamination during sample collection activities.

4.0 Equipment and materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, depending on the field conditions encountered:

- Diaphragm or equivalent water pump, variable speed
- 12-volt battery (as needed)
- CFLEX or equivalent polymer tubing (typical configuration requires 1.2 in. OD)
- Niskin or equivalent sampling bottle
- Sample containers as specified in the workplan (AECOM 2017a)
- Connective (serial) cabling
- Weight bearing line/cable
- Field computer (if applicable)
- Project specific field log book
- Chemical-free wipes
- Disinfectant wipes
- Approved plans, including target sampling locations
- Insulated coolers with wet ice
- Field notebook, pen, standardized forms (as needed)
- Chain-of-custody forms and seals
- Replacement batteries
- GPS

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- Safety gear (work vests, APP specified PPE)
- Nitrile gloves
- Gauntlet gloves
- Storage bags
- Boat with all applicable safety equipment (anchor, etc.)
- Dry storage cooler

5.0 Procedures

5.1 Water Pump/Tubing Set-up

Connect the pump to a 6-volt battery or other power source. The water pumps and associated tubing used on this investigation should be rinsed with potable water before and after each (daily) use. Project tubing should be new at the project start, and rinsed thoroughly with deionized water. The tubing should be sealed in a bag when not in use; open tube ends should also be covered and protected when not in use, including between stations. Between-station rinsing is not generally required but flushing the system with site water at each sampling location is to be performed. The number of minutes required to purge the pump and tubing will be calculated as follows:

$$(((\pi r^2 \times l)/10)/f) \times 3 = \text{minutes to purge the pump}$$

Where:

π = pi

r = half the inner diameter of the tubing (centimeters)

l = length of tubing used on station (meters)

f = flow rate of the pump (liters/minute)

5.2 Field Data and Sample Collections

- 5.2.1** Navigate to sampling stations outlined in the project sampling plan using the GPS unit.
- 5.2.2** Estimate and record the depth of the water. Water depth may be recorded using a weighted line with 0.1 ft increments marked.
- 5.2.3** Samples will be collected from mid-depth when overlying water is less than 30 feet. For locations with greater than 30 feet depth, samples will be composite samples from near top, mid-depth and near bottom (3 feet from sediment) samples per the SOW (NAE 2017) and workplan (AECOM 2017a).

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- 5.2.4** In areas that require pumped collections, flush the tubing with water collected at the depth of interest. Given the small (typically ¼ in) tube diameter, flushing will be complete for a 25-foot tube well within 10 seconds with a flow rate of ~5 L/min or better (Section 5.2).

When the purge is complete, wearing nitrile gloves, fill each sample container while avoiding contact between the sampling tube and the bottle.

If collecting from multiple depths, no additional purging is required between depths of the same location.

- 5.2.5** In areas and for parameters that allow grab sampling, the Niskin or equivalent sampler is lowered to the desired depth. The trigger mechanism is activated to close the sampler and the sampler is retrieved to the boat. Water from the sampler may be poured directly in the sample containers. Place the capped container on ice in a cooler.
- 5.2.6** Samples will be placed in coolers and stored on ice (refer to the SAP for containerization and storage specifications) until shipment or transfer to the laboratory.
- 5.2.7** All discrete water samples should be collected and stored/transferred to laboratories according to the procedures described in FGDs for Packaging and Shipping.

6.0 Quality assurance / quality control

It is the responsibility of the Field Team Leader (FTL) to check the calibration information, to spot check instrument operations, and to check the documentation accuracy of all field staff.

Quality control (QC) samples may include equipment blanks, field and laboratory duplicates.

6.1 Equipment blanks

Equipment blanks will be collected at the frequency specified in the SAP, and from each set of sampling gear (e.g., tubing, tubing outfitted with a filter, and bottle sampler with tubing, etc.), after the sampling gear is decontaminated.

Equipment blanks may be collected if required by the SAP for pumped samples by flushing the collection tube with deionized water and filling a set of containers with deionized water that has been pumped through the system.

If required, bottle blanks may be used to evaluate potential contamination associated with the direct grab sampling technique. In this case, bottles may be filled directly with deionized, capped, bagged, and stored on ice for transfer to the laboratory.

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7.0 Data and records management

Calibration records will be recorded in the field log. Field records will be generated and maintained as outlined in the workplan (AECOM 2017a). The workplan addresses all aspects of collection including data and sample types, station locations, and chronology of events.

Deviations to the procedures detailed in the SOP must be recorded in the field logbook and communicated to the Task Manager and the QA Officer at the end of the day.

8.0 Personnel qualifications and training

The individuals executing these procedures must have read, and be familiar with, the requirements of this SOP and the workplan (AECOM 2017a). Water sample collections are relatively simple procedures requiring minimal training. However, initial instrument calibrations and sample/data collections should be supervised by the FTL.

9.0 References

AECOM 2017a. Laboratory Testing in Support of Environmental Assessment, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

AECOM 2017b. Accident Prevention Plan, Sampling and Environmental Testing – New Haven Harbor Federal Navigation Project, New Haven, Connecticut. USACE Contract No. W912WS-17-D-0003. Delivery Number W912WJ17F0036. August 2017.

NAE 2017. Statement Of Work, Sampling and Testing in Support of Dredged Material Suitability Determination, New Haven Harbor Navigation Improvement Project, New Haven, Connecticut. May 31, 2017.

10.0 Revision history

Revision	Date	Changes
0	August 2017	NA

Appendix B Field Report

Field Report for Dredged Material Suitability Testing and Evaluation in the New Haven Harbor FNP

United States Army Corps of Engineers

Project Number: 60543021

December 12, 2017

Quality information

Prepared by



C. Stephen Howe, P.H
Senior Project Hydrologist

Checked by



Approved by



Ryan McCarthy
Project Manager

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	9/13/17	Original			
1.0	12/12/17	Attachments 3 and 4 replaced by finalized core logs	Yes	Ryan McCarthy	Project Manager

Prepared for:

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Attachment 1 New Haven Harbor 2017 Daily and Weekly Activity Logs

Attachment 2 New Haven Harbor 2017 Project SH&E Documentation

Attachment 3 New Haven Harbor 2017 Finalized Core Logs

Attachment 4 New Haven Harbor 2017 Chain of Custody Forms

Attachment 5 New Haven Harbor 2017 Field Log Books

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Acronyms

CENAE	U.S. Army Corps of Engineers, New England District
CLDS	Central Long Island Sound Disposal Site
COC	Chain of Custody
DGPS	Differential Global Positioning System
MLLW	Mean Lower Low Water
NOAA	National Oceanographic and Atmospheric Administration
OSI	Ocean Surveys Incorporated
SAP	Sampling and Analysis Plan
SPP	Suspended Particulate Phase

1. New Haven Harbor 2017 Field Summary

The project field effort commenced August 8th 2017 and was completed on August 17th, 2017. The program was divided into three tasks that were scheduled to occur over a two-week period. The first task was the initial collection of sediment cores at twenty-six (26) stations that were grouped into eight (8) separate transects across the project area. Those cores were analyzed for grain size to determine stations, sampling depths and volume to be collected during the second task for biological and toxicological testing. The initial 26 locations also had samples submitted for chemical analyses. The third task involved sediment and water collection at the Central Long Island Sound Disposal Site (CLDS) reference site.

Ocean Surveys Inc. (OSI), provided field services for the collection of core, grab, and water samples at each of the selected stations. Table 1 summarizes the activities accomplished each day during the survey. Detailed Daily Activity Logs are provided in Attachment 1. All harbor coring activities were conducted aboard the vessel R/V CanDu. CLDS reference site samples (sediment/ water), selected harbor water site samples, and sediment volume samples at station NHH-I were collected from the vessel R/V Ready II.

2. Health and Safety

New Haven Harbor sampling activities were completed without incident. Each participant took an active part during the weekly safety briefings as well as daily safety briefings which are documented on the Daily and Weekly Activity Logs (Attachment 1). The Task Order Manager was de-briefed at the end of each day during field activities. Float Plans covering the days boating activities and safety protocols are compiled as Attachment 2.

3. Sediment collection

Sediments were collected using a 3.5-inch diameter vibracore at most harbor stations as outlined in the project Sampling and Analysis Plan (SAP). An initial core was collected at each of the 26 stations for grain size and chemistry. At station NHH-I, with a project depth of just 2.5 feet, approval was obtained from the U.S. Army Corps of Engineers, New England District (CENAE) Technical Manager to use a Van Veen grab sampler to obtain the volume needed to augment sediment collected from the station during the first week of vibracoring.

The sediment collection process was also modified with approval at station NHH-C during the volume collection week. Due to the large volume needed at the station (23 gallons) and the short target core depth (within the uppermost 2.8 feet), two cores were stacked (i.e., core barrel advanced, withdrawn, and advanced again without removing sediment) within a 5-foot core barrel. The approach greatly reduced the time to collect required sediment volume.

3.1 Vessel Positioning

Vessel positioning and the determination of actual core sample locations was accomplished utilizing a Differential Global Positioning System (DGPS). The coring vessel was held on station with a multi-point anchor spread. The local National Oceanic and Atmospheric Administration (NOAA) tide data were obtained from Station 8465705 to calculate tidal height in feet above mean lower low water (MLLW). Table 2 lists the actual coring positions for each coring attempt.

3.2 Core sample handling

All cores targeted/ specified in the project SAP were successfully collected during the ten-day field effort. Figure 1 depicts the proposed sampling stations targeted for this effort. Multiple cores were required at most stations to collect the full project volume. Given the very soft nature of the harbor sediment, target core penetrations generally went beyond the target project depth in an attempt to reach clay rich material that would aid in core retention in the barrel. Excess material retained in the split core barrels was discarded/ returned to the harbor. Excess material included sediment below project depth as well as sediment collected within the project depth that was subsequently determined to not be of interest due to composition and stratigraphy.

Table 2 lists the exact locations occupied for each station collection, along with core penetration and recovery information. As indicated in Table 2, recovery in cores was typically in excess of 80% (with very few exceptions).

After collection, the core was cut into 5.0-foot sections to facilitate handling. The liner of those individual core sections were then split longitudinally, photographed, and described/ logged. New Haven Core Logs are provided in Attachment 3. At many of the stations, two depth intervals were selected for sampling due to changes in stratigraphy (composition and color). All sub-sampling determinations were made by the USACE field representative. At some of the stations where an upper (or top) and lower (or bottom) interval was delineated, the bottom interval was sandy and determined to not be of interest from a chemical/ toxicological standpoint. Samples from many of those sandy bottom intervals were collected for grain-size analysis only.

After logging was complete, the requisite core section (surface to project depth) was transferred to storage containers (polyethylene plastic buckets). Homogenized material from the bucket containers were subsampled for rapid grain-size analysis and chemistry. Excess materials were retained for later compositing with material collected during the second sampling week. At each transect, one to two cores were collected for archeological review by the USACE archeologist. Those archeological cores were cut into individually labeled, 5-foot sections, and stored horizontally in cold storage until delivery at the USACE Fort Devens facility. All samples retained for analysis (grain size, chemistry, archeology, and toxicology) were stored on the sampling vessel in coolers. At the end of each day, samples were off-loaded from the vessel and transferred into a locked refrigerated box truck set to 2.2 °C. Samples for grain size and chemistry were handed off to the laboratory courier.

Based upon grain-size analyses on cores collected during the first week of the program, additional sediment volume was collected from each transect to attain an approximate 25-gallon total volume for toxicological/ biological testing. At the A-B-C transect (located outside the breakwater), only the uppermost 2.8-feet of sediment from station NHH-C were determined to be of interest, requiring a large number of short cores (NHH-A and NHH-B were excluded due to sand). The NHH-C cores were collected by "stacking" two nearby cores together in a single 5-foot core barrel to limit down time between core attempts and processing time on the boat. A total of twenty three (23 cores) were collected from station NHH-C during the 10-day program.

After the requisite sediment volume was collected at each station, the coring gear and sub-sampling gear was decontaminated as outlined in the SAP.

3.3 Grab sample handling

Grab sampling was accomplished as outlined in the SAP using a Van Veen grab sampler and a Ponar grab sampler. Multiple deployments of the Van Veen and Ponar grab samplers were required to obtain the needed 25-gallons of sediment for testing. For each grab, the sample was examined for disturbance, then transferred to a polyethylene bucket. The sediments collected by grab sampler at the reference site were transferred to the refrigerated box truck upon return to the dock.

3.4 Water collections

Water samples from the harbor area (site water) were collected using a pump and tubing system as outlined in the SAP. All three harbor water samples were collected from mid-depth in the water column. The water sample from the reference area (suspended particulate phase [SPP] dilution water) was collected using a large Niskin bottle. Given the site depth at the CLDS reference area, water was collected from three separate depths in the water column (approximately 3-feet below the surface, mid-depth, and approximately 3-feet off the bottom). Table 3 summarizes the volumes collected at each station. Water samples were also transferred to the refrigerated box truck immediately after returning to the dock.

4. Field QA/QC procedures

Equipment blanks were collected from the coring equipment on August 9th during coring activities. Additional equipment blanks were collected from the Niskin bottle, sediment grab samplers, and pump/ tubing system on August 17th.

All equipment blanks were placed in the locked refrigerated box truck after collection and later iced for courier transport.

All samples were held under chain of custody (COC), and signed for during ownership transfer (Attachment 4).

5. SAP deviations/difficulties encountered

There are a few notes of interest relative to the New Having Haven sediment collection effort:

1. Significant changes to bottom topography were encountered relative to the last bathymetric study of the harbor. At all locations, the planned core depth (project depth plus a 2-foot allowable over depth) required adjustment in the field using real time tidal data from NOAA (which occasionally resulted in a core barrel changeover).
2. Archeological cores were moved from two stations. The core proposed for NHH-Z was moved to NHH-X and the core proposed for NHH-A was moved to NHH-C.
3. Due to the large volume of sediment required from a short interval at station NHH-C during the second week of the program, two individual cores were stacked within a single 5-foot core barrel prior to processing. This approach was approved beforehand by the CENAE Technical Manager, Richard B. Loyd. Prior to proceeding with the stacked approach, a single 5-foot core was collected for comparison to the stacked core samples to verify that appropriate materials and recovery were retained within the 20 stacked samples.
4. Similarly, volume collection at NHH-I would have required a large number of cores due to the shallow sample depth. In order to meet schedule constraints, CENAE Technical Manager, Richard B. Loyd, approved collection using a Van Veen grab sampler from the R/V Ready II.

All project logbook entries are included as Attachment 5.

Table 1 New Haven Survey Field Survey Activity Summary

Date	Survey Activities	Equipment	Platform
7 August 17	Mobilization and refrigerated truck pick up	-	-
8 August 17	Sediment coring at stations - NHH-X, Y, Z, M, N, O, T	Vibracore	R/V CanDu
9 August 17	Sediment coring at stations - NHH - P, Q, U, V, W; Archaeological core collected from NHH - P. Rinseate Blank collected for coring equipment.	Vibracore	R/V CanDu
10 August 17	Sediment coring at stations - NHH - R, S, J, L, K, H (field dup), I	Vibracore	R/V CanDu
11 August 17	Sediment coring at stations - NHH - G, C, B, A, D, F	Vibracore	R/V CanDu
12 August 17	Sediment coring at stations - NHH - X, Z, P, T	Vibracore	R/V CanDu
13 August 17	Sediment coring at stations - NHH - Y, M, N; Archaeological core collected from NHH - M	Vibracore	R/V CanDu
14 August 17	Sediment coring at stations - NHH - E, J, K, O; Archaeological core collected from NHH - M	Vibracore	R/V CanDu
15 August 17	Sediment coring at stations - NHH - W, S, L, V	Vibracore	R/V CanDu
16 August 17	Sediment coring at stations - NHH - R, H, E, D, F	Vibracore	R/V CanDu
17 August 17	Sediment coring at stations - NHH - G and C; Archaeological core collected from NHH-G and C. CLDS - REF water and sediment grab sampling. NHH water and sediment grab sampling. Rinseate blank collected for Niskin Bottle, Pump/Tubing, and Grab Samplers.	Vibracore/ Niskin Bottle/ Pump and tubing System/ Ponar/ Van Veen	R/V CanDu/ R/VReady II

Table 2 New Haven Sediment Sampling Detail

Station	Station ID/Attempt No.	Date	Time ¹		Latitude	Longitude	Water Level (Ft, MLLW)	Water Depth (Ft)	Sediment Elevation	Penetration	Recovery	Volume Collected (Gallons) ²
A	A	8/11/2017	13:10	A	41.2227	72.9110	6.00	34.7	-28.7	13.0	11.0	Excluded
B	B	8/11/2017	11:43	B	41.2231	72.9100	4.04	43.8	-39.8	9.0	8.8	Excluded
C	C	8/11/2017	10:13	C	41.2234	72.9090	1.80	37.1	-35.3	15.0	15.5	22
	C-2	8/17/2017	11:28	C_2	41.2235	72.9090	2.85	36.6	-33.8	5.0	4.7	
	C-3	8/17/2017	12:01	C_3	41.2235	72.9090	2.12	35.8	-33.7	5.0	4.6	
	C-4/5	8/17/2017	12:31	C_4/5	41.2234	72.9090	1.61	35.4	-33.8	2.5 - 5.0	4.6	
	C-6/7	8/17/2017	13:22	C_6/7	41.2234	72.9090	0.87	35.1	-34.2	2.5 - 5.0	n/a	
	C-8/9	8/17/2017	13:48	C_8/9	41.2234	72.9090	0.74	35.6	-34.9	2.5 - 5.0	n/a	
	C-10/11	8/17/2017	14:08	C_10/11	41.2234	72.9090	0.70	35.8	-35.1	2.5 - 5.0	n/a	
	C-12/13	8/17/2017	14:41	C_12/13	41.2234	72.9090	Gauge down	36.4	Gauge down	2.5 - 5.0	n/a	
	C-14/15	8/17/2017	15:01	C_14/15	41.2234	72.9091	Gauge down	38.8	Gauge down	2.5 - 5.0	n/a	
	C-16/17	8/17/2017	15:45	C_16/17	41.2234	72.9091	Gauge down	40.4	Gauge down	2.5 - 5.0	n/a	
	C-18/19	8/17/2017	16:04	C_18/19	41.2235	72.9091	Gauge down	39.4	Gauge down	2.5 - 5.0	n/a	
	C-20/21	8/17/2017	16:44	C_20/21	41.2235	72.9091	Gauge down	38.3	Gauge down	2.5 - 5.0	n/a	
	C-22/23	8/17/2017	17:03	C_22/23	41.2235	72.9090	Gauge down	38.2	Gauge down	2.5 - 5.0	n/a	
D	D	8/11/2017	14:51	D	41.2481	72.9160	7.22	25.2	-18.0	19.5	19.5	26
	D-2	8/16/2017	14:24	D_2	41.2481	72.9160	1.89	20.5	-18.6	15.5	15.8	
E	E	8/14/2017	8:14	E	41.2479	72.9147	2.75	38.6	-35.9	10.0	9.8	
	E-2	8/16/2017	12:15	E_2	41.2479	72.9147	1.06	37.0	-35.9	10.0	9.9	
	E-3	8/16/2017	12:44	E_3	41.2479	72.9146	0.84	37.0	-36.2	10.0	9.8	
F	F	8/11/2017	16:25	F	41.2479	72.9139	5.70	23.4	-17.7	17.0	16.5	
	F-2	8/16/2017	15:52	F_2	41.2479	72.9139	4.02	21.9	-17.9	15.0	14.2	31**
	F-3	8/16/2017	16:40	F_3	41.2478	72.9139	5.31	23.5	-18.2	15.0	15.2	
G	G	8/11/2017	8:17	G	41.2622	72.9138	0.10	16.0	-15.9	20.0	19.6	
	G-2	8/17/2017	8:30	G_2	41.2622	72.9139	6.35	21.7	-15.4	19.5	19.6	
	G-3	8/17/2017	9:19	G_3	41.2622	72.9138	5.66	21.0	-15.3	16.0	16.0	
H	H	8/10/2017	15:35	H	41.2621	72.9134	5.80	42.0	-36.2	10.0	9.3	
	H-2	8/16/2017	10:09	H_2	41.2621	72.9133	3.16	39.2	-36.0	10.0	9.7	
	H-3	8/16/2017	10:43	H_3	41.2621	72.9133	2.43	38.4	-36.0	9.0	8.7	
I	I	8/10/2017	17:33	I	41.2621	72.9118	2.87	24.2	-21.3	18.0	17.5	

Table 2 (continued) New Haven Sediment Sampling Detail

Station	Station ID/Attempt No.	Date	Time ¹		Latitude	Longitude	Water Level (Ft, MLLW)	Water Depth (Ft)	Sediment Elevation	Penetration	Recovery	Volume Collected (Gallons) ²
J	J	8/10/2017	11:09	J	41.2783	72.9132	4.40	25.5	-21.1	10.0	9.7	23
	J-2	8/14/2017	10:08	J_2	41.2783	72.9133	0.76	20.8	-20.0	10.0	9.4	
	J-3	8/14/2017	10:41	J_3	41.2783	72.9133	0.64	20.3	-19.7	10.0	9.5	
	J-4	8/14/2017	11:06	J_4	41.2783	72.9133	0.60	20.4	-19.8	10.0	9.5	
K	K	8/10/2017	13:58	K	41.2784	72.9127	6.98	42.8	-35.8	10.0	9.1	
	K-2	8/14/2017	12:21	K_2	41.2784	72.9125	1.65	38.1	-36.5	10.0	8.9	
	K-3	8/14/2017	13:13	K_3	41.2784	72.9125	2.87	39.8	-36.9	9.0	8.0	
	K-4	8/14/2017	13:40	K_4	41.2784	72.9125	3.60	40.6	-37.0	10.0	9.1	
L	L	8/10/2017	12:50	L	41.2785	72.9110	6.20	27.9	-21.7	10.0	9.8	
	L-2	8/15/2017	13:32	L_2	41.2784	72.9111	2.17	25.9	-23.7	10.0	9.1	
	L-3	8/15/2017	14:14	L_3	41.2784	72.9110	3.20	25.9	-22.7	10.0	9.2	
	L-4	8/15/2017	15:15	L_4	41.2784	72.9110	4.66	25.5	-20.8	10.0	9.9	
M	M	8/8/2017	15:56	M	41.2864	72.9120	3.25	33.6	-30.4	10.0	9.7	29
	M-2	8/13/2017	11:24	M_2	41.2864	72.9120	1.47	29.4	-27.9	10.0	9.6	
	M-3	8/13/2017	12:02	M_3	41.2864	72.9120	2.44	32.2	-29.8	10.0	9.5	
	M-4	8/13/2017	12:34	M_4	41.2864	72.9120	3.33	34.9	-31.6	10.0	9.3	
N	N	8/8/2017	12:55	N	41.2863	72.9106	6.92	43.4	-36.5	10.0	9.3	
	N-2	8/13/2017	14:43	N_2	41.2863	72.9105	6.33	42.3	-36.0	10.0	9.5	
	N-3	8/13/2017	15:29	N_3	41.2863	72.9105	6.79	42.7	-35.9	10.0	9.3	
	N-4	8/13/2017	16:32	N_4	41.2863	72.9105	6.84	43.0	-36.2	10.0	9.3	
O	O	8/8/2017	14:30	O	41.2861	72.9092	5.48	38.6	-33.1	13.0	13.4	
	O-2	8/14/2017	15:54	O_2	41.2861	72.9092	6.44	40.7	-34.3	10.0	9.3	
	O-3	8/14/2017	16:51	O_3	41.2861	72.9092	7.24	41.1	-33.9	10.0	9.6	
P	P	8/9/2017	10:48	P_1	41.2924	72.9131	4.57	20.4	-15.8	30.0	29.6	28
	P-2	8/9/2017	12:00	P_2	41.2924	72.9131	6.08	22.1	-16.0	30.0	29.3	
	P-3	8/12/2017	8:26	P_3	41.2924	72.9132	0.66	16.3	-15.6	16.0	15.8	
Q	Q	8/9/2017	14:04	Q	41.2923	72.9119	6.64	18.8	-12.2	30.0	29.4	
R	R	8/10/2017	8:10	R	41.2920	72.9099	0.12	36.2	-36.3	9.5	9.2	
	R-2	8/16/2017	8:16	R_2	41.2920	72.9099	5.58	41.8	-36.2	10.0	9.8	
S	S	8/10/2017	9:39	S	41.2918	72.9081	1.70	39.3	-37.6	10.0	9.5	
	S-2	8/15/2017	10:58	S_2	41.2919	72.9081	1.08	38.5	-37.4	10.0	9.8	
	S-3	8/15/2017	11:33	S_3	41.2919	72.9081	0.88	38.3	-37.4	10.0	9.7	
	S-4	8/15/2017	12:01	S_4	41.2919	72.9081	0.72	38.4	-37.7	10.0	9.8	

Table 2 (continued) New Haven Sediment Sampling Detail

Station	Station ID/Attempt No.	Date	Time ¹		Latitude	Longitude	Water Level (Ft, MLLW)	Water Depth (Ft)	Sediment Elevation	Penetration	Recovery	Volume Collected (Gallons) ²
T	T	8/8/2017	17:19	T	41.2943	72.9120	1.39	10.1	-8.7	20.0	19.7	31
	T-2	8/12/2017	10:39	T_2	41.2943	72.9120	0.41	10.5	-10.1	19.5	19.3	
	T-3	8/12/2017	11:13	T_3	41.2943	72.9120	1.06	11.5	-10.4	19.5	18.9	
U	U	8/9/2017	8:37	U	41.2942	72.9112	1.25	13.0	-11.8	30.0	29.9	
V	V	8/9/2017	17:25	V	41.2940	72.9095	2.00	37.4	-35.4	10.0	9.7	
	V-2	8/15/2017	16:31	V_2	41.2940	72.9095	6.37	41.8	-35.4	9.8	8.9	
W	W	8/9/2017	16:12	W	41.2939	72.9078	3.49	39.0	-35.5	10.0	9.8	
	W-2	8/15/2017	8:24	W_2	41.2938	72.9078	4.08	40.2	-36.1	10.0	9.2	
	W-3	8/15/2017	9:05	W_3	41.2938	72.9078	2.98	38.8	-35.8	10.0	9.7	
	W-4	8/15/2017	9:44	W_4	41.2938	72.9078	2.40	37.3	-34.9	10.0	9.4	
X	X	8/8/2017	8:43	X	41.2974	72.9076	2.96	22.0	-19.0	10.0	9.7	26
	X-2	8/12/2017	15:16	X_2	41.2975	72.9076	6.90	24.9	-18.0	10.0	9.5	
	X-3	8/12/2017	15:54	X_3	41.2975	72.9076	6.74	24.7	-18.0	10.0	9.0	
	X-4	8/12/2017	16:56	X_4	41.2975	72.9076	5.60	22.7	-17.1	10.0	9.4	
Y	Y	8/8/2017	10:34	Y	41.2969	72.9067	4.96	40.5	-35.5	10.0	9.4	
	Y-2	8/13/2017	8:05	Y_2	41.2969	72.9067	1.23	37.3	-36.1	10.0	7.1	
	Y-3	8/13/2017	9:35	Y_3	41.2969	72.9067	0.26	35.8	-35.5	10.0	9.3	
	Y-4	8/13/2017	10:01	Y_4	41.2969	72.9067	0.25	36.0	-35.8	10.0	9.1	
Z	Z	8/8/2017	11:43	Z	41.2964	72.9060	6.35	41.6	-35.3	10.0	9.7	
	Z-2	8/12/2017	13:09	Z_2	41.2964	72.9060	4.19	41.0	-36.8	10.0	9.7	
	Z-3	8/12/2017	13:51	Z_3	41.2964	72.9061	5.24	42.7	-37.5	10.0	9.5	

¹As recorded on OSI log.

²Transect sediment volume after sieving to remove large organic debris (shells, wood, etc.) and rocks. Transect volumes contributed from each selected coring station were generally similar prior to sieving.

** Additional volume was collected from Station I for transect G-H-I composite on 8/17/17 using grab sampler to capture shallow interval samples (<2.5 feet).

Table 3 New Haven Harbor Water Sampling Detail

Station	Date	Time	End Time	Latitude	Longitude	Gallons Collected
CLDS REF BOTTOM	8/17/2017	1015	1030	41.1348	72.8347	10
CLDS REF MID	8/17/2017	1045	1100	41.1348	72.8347	10
CLDS REF TOP	8/17/2017	1115	1130	41.1348	72.8347	10
NHH-F	8/17/2017	1300	1325	41.2478	72.9139	30
NHH-I	8/17/2017	1425	1500	41.2621	72.9118	35
NHH-V	8/17/2017	1528	1555	41.2940	72.9095	65

Figure 1 Target Coring and Water Sampling Locations - New Haven Harbor Sediment Characterization Study

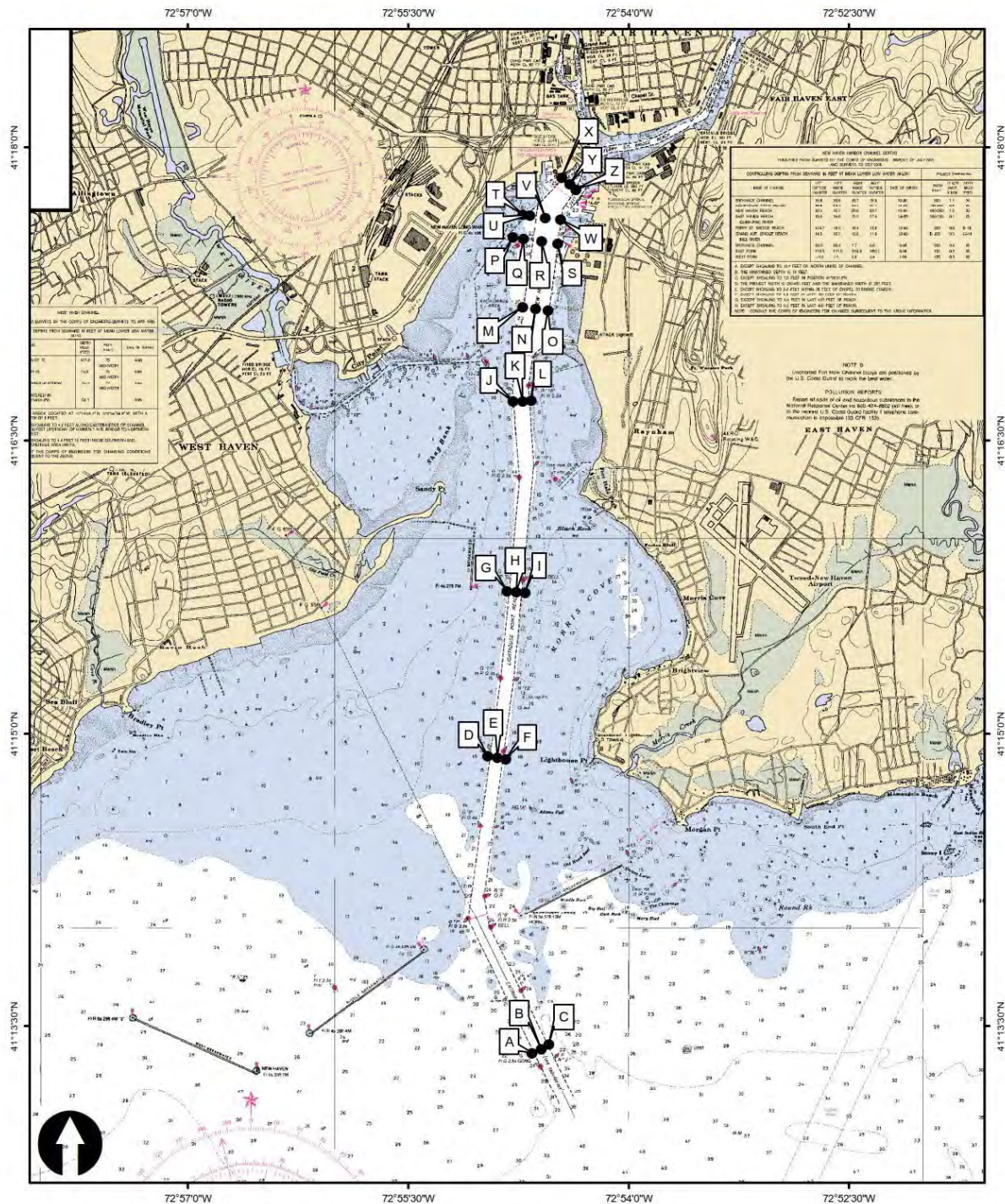


Figure 1: Target Coring and Water Sampling Stations - New Haven Harbor Sediment Characterization Study

- Target Sampling Locations

Projection: NAD83 CT State Plane Feet

NOAA Chart: 12371

0 0.25 0.5 1 Nautical Miles

Figure 2 Actual Coring and Water Sampling Locations - New Haven Harbor Sediment Characterization Study

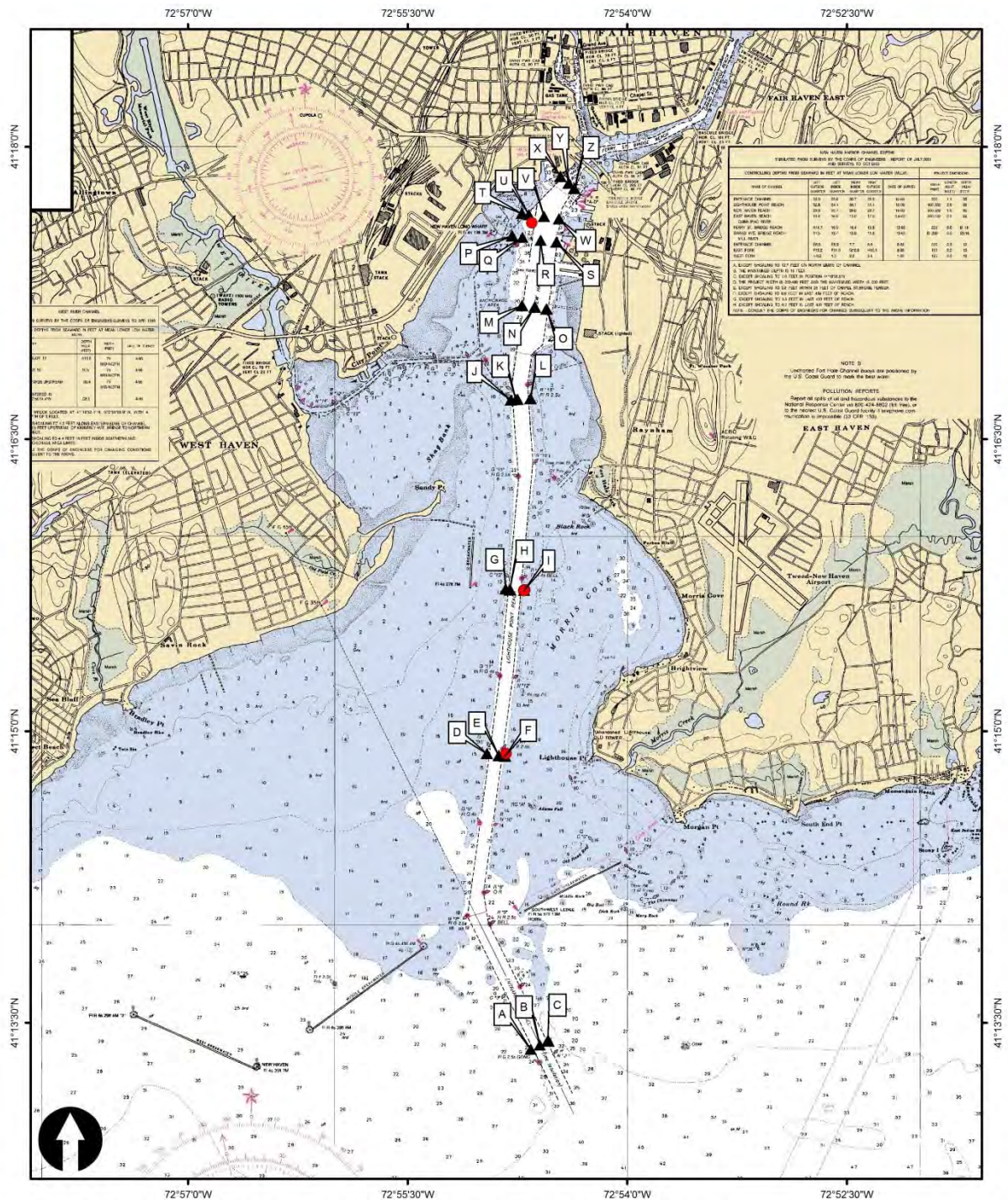


Figure 2: Actual Coring and Water Sampling Stations - New Haven Harbor Sediment Characterization Study

Attachment 1 New Haven Harbor 2017 Daily and Weekly Activity Logs

Daily Activity Log New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/8/17

Vessel/Sampling Platform: R/V CADD

Personnel (Name/Affiliation/Role):

RYAN MCARTHY - AECOM - TOM

MORGAN BARRETT - OSI - OPERATOR

C. STEVE HOWE - AECOM - FIL

TODD RANDALL - NAE

KEN CADMUS - OSI - FIELDHEAD

SEPP PYDESKI - OSI - VESSEL OPERATOR

Sampling Performed/Equipment Used:

VIBROCORE SAMPLING IN NEW HAVEN HARBOR

Stations Sampled:

NHH-

X, Y, Z, M, N, O, T

Health and Safety Issues: N/A

HAD DETAILED PROJECT KICKOFF (SITE) BEFORE COMMENCING PROGRAM

Deviations from Approved Plan:

N/A

Dock Departure Time: 0800

Dock Return Time: 1850

Recorded by: RYAN MCARTHY



Daily Activity Log New Haven FNP Sediment Evaluation	USACE Contract No. W912WJ-17-D-0003 Delivery Order No. W912WJ17F0036
Date: 08/09/17	
Vessel/Sampling Platform: R/V CanDu	
Personnel (Name/Affiliation/Role):	
Ryan McCarthy - TOM - AECOM	C. Steven Howe - FTL - AECOM
Todd Randall - USACE	
Jeff Pydeski - Vessel Operator - OSI	Morgan Barrett - Equipment Operator - OSI
Sampling Performed/Equipment Used:	
Vibracore sampling in New Haven Harbor	
Equipment blank	
Stations Sampled:	
P, Q, U - 30' stations. Archaeological core collected from NHH-P	
V, W	
Health and Safety Issues: N/A	
Deviations from Approved Plan: N/A	
Dock Departure Time: 0745	
Dock Return Time: 1845	
Recorded by: Ryan McCarthy	

Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/10/17

Vessel/Sampling Platform: RV Can Du

Personnel (Name/Affiliation/Role):

C. Steve Howe - FTL - AECOM

Clare Murphy-Hargan - AECOM Todd Randall - USACE

Jeff Pydeski - Vessel Operator - OSI

Morgan Barrett - Equipment Operator - OSI

Sampling Performed/Equipment Used:

Vibracore sampling in New Haven Harbor

Stations Sampled:

R, S, J, L, K, H, I, Field duplicate at H

Health and Safety Issues: N/A

Deviations from Approved Plan: N/A

Dock Departure Time: 0745

Dock Return Time: 1845

Recorded by: C. Steve Howe

Daily Activity Log New Haven FNP Sediment Evaluation

Date: 8/11/17

Vessel/Sampling Platform: RV Carbu

Personnel (Name/Affiliation/Role):

C. Steve Howe - FTL - AECOM Todd Randall - USACE

Clare Murphy-Hagan - AECOM

Jeff Rydeski - vessel operator - OSI

Morgan Barrett - Equipment Operator - OSI

Sampling Performed/Equipment Used:

Vibracore sampling in New Haven Harbor

Stations Sampled:

G, C, B, A, D, F

Health and Safety Issues: The wind and waves picked up in the evening making the core barrel swing excessively. The team did not proceed to the last station (NHH-E)

Deviations from Approved Plan:

Dock Departure Time: 0745

Dock Return Time: 1805

Recorded by: C. Steve Howe

Daily Activity Log

New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003

Delivery Order No. W912WJ17F0036

Date: 08/12/17

Vessel/Sampling Platform: RC Canoe

Personnel (Name/Affiliation/Role):

R. MacPhee - FTZ - AECOM

Chace Smith - AECOM

Jeff Pydeski - Vessel operator - OSI

Morgan Barrett - Equipment operator - OSI

Sampling Performed/Equipment Used:

Vibracore Sampling in New Haven Harbor

Stations Sampled:

X, Z, P, T

Health and Safety Issues:

Deviations from Approved Plan:

Dock Departure Time:

0805

Dock Return Time:

1815

Recorded by:

R. MacPhee

Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 08/13/17

Vessel/Sampling Platform:

RV Candu

Personnel (Name/Affiliation/Role):

R. MacPhee - FTL - AECOM

Marc Smith - AECOM

Jeff Rydeski - Vessel operator - OSI

Morgan Barrett - Equipment operator - OSI

Sampling Performed/Equipment Used:

Vibrocore Sampling in New Haven Harbor

Stations Sampled:

Y, M, N

Health and Safety Issues:

Deviations from Approved Plan:

Dock Departure Time:

0745

Dock Return Time:

0130 1200

Recorded by:

R. MacPhee

Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/14/17

Vessel/Sampling Platform: Can Du

Personnel (Name/Affiliation/Role):

C. Steve Howe - FTL AECOM Marc Smith AECOM
Jeff Rydski - Boat Captain - OSI
Morgan Barrett - equipment operator - OSI
Kevin Murphy - OSI - equipment operator

Sampling Performed/Equipment Used:

Vibracone sampling in New Haven Harbor

Stations Sampled:

E - grain size and chemistry
J - Jardeological core and volume collection
K & O - volume collection

Health and Safety Issues: Morgan (OSI equipment operator)
was experiencing discomfort with an existing knee
issue so left boat. Replaced by Kevin Murphy

Deviations from Approved Plan:

None

Dock Departure Time: 0730

Dock Return Time: 1803

Recorded by: C. Steve Howe

Daily Activity Log
New Haven FNP Sediment Evaluation

Date: 8/15/17

Vessel/Sampling Platform: Can Du

Personnel (Name/Affiliation/Role):

C. Star Hone - FTL AECOM
Clare Murphy - Hagan AECOM
Kevin Murphy - OSI - equipment operator
Jeff Pydeska - Boat captain - OSI

Sampling Performed/Equipment Used:

Vibra core sampling in New Haven Harbor

Stations Sampled:

W, S, L, V

Health and Safety Issues: None

Deviations from Approved Plan: None

Dock Departure Time: 0745

Dock Return Time: 1735

Recorded by: C. Star Hone

Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/16/17

Vessel/Sampling Platform:

RV Can Du

Personnel (Name/Affiliation/Role):

Jeff Pydeski - Captain - OSI

Kevin Murphy - Equipment Operator - OSI

Clare Murphy - Hagan

C. Steve Hagan

Sampling Performed/Equipment Used:

Vibrocore sampling in New Haven Harbor

Stations Sampled:

L, H, E, D, F

Health and Safety Issues:

None

Deviations from Approved Plan:

None

Dock Departure Time:

0745

Dock Return Time:

Recorded by:

C. Steve Hagan

Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/17/17

Vessel/Sampling Platform:

RV CanDu

Personnel (Name/Affiliation/Role):

Jeff Pydeski, Captain, OSI

Kevin Murphy, OSI

C. Steve Howe, FTL, AECOM

Clare Murphy-Hugan, AECOM

Sampling Performed/Equipment Used:

Vibracore sampling in New Haven Harbor

Stations Sampled:

G, L

Health and Safety Issues:

None

Deviations from Approved Plan:

None

Dock Departure Time:

0745

Dock Return Time:

1811

Recorded by:

C. Steve Howe



Daily Activity Log
New Haven FNP Sediment Evaluation

USACE Contract No. W912WJ-17-D-0003
Delivery Order No. W912WJ17F0036

Date: 8/17/17

Vessel/Sampling Platform: R/V READY II

Personnel (Name/Affiliation/Role):

RYAN MCCARTHY - AECOM
KEN CADMUS - OSI
MIKE LINCOLN - OSI

Sampling Performed/Equipment Used:

CLDS REF - SEDIMENT/WATER SAMPLING
NHH - HARBOR WATER COLLECTION
NHH - NHH-1 - GRAB SAMPLING

Stations Sampled:

CLDS-REF
NHH-1

Health and Safety Issues: N/A

Deviations from Approved Plan: GRAB SAMPLING INSTEAD OF
CORING AT STATION NHH-1 (PER CONVERSATION
WITH NAE STAFF)

Dock Departure Time: 0730

Dock Return Time: 1830

Recorded by: RYAN MCCARTHY

WEEKLY SAFETY MEETING

Date Held: 8/8/17
Time: 0730

CONTRACTOR: AECOM Contract No. DACW33- W912WJ-17-D-003
PERSONNEL PRESENT (check): Contractor ☒ Sub. ☒ Government ☒

SUBJECTS DISCUSSED (check items that were discussed during meeting):

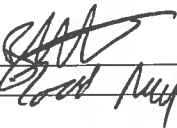
USACE EM385-1-1 ☒ (Specific sections: _____)
On-site Accident Prevention Plan (or Site Safety and Health Plan) ☒
Individual protective equipment (steel-toed boots, safety glasses, etc..) ☒
Prevention of slips/falls ☒
Back injury/safe lifting techniques _____
Fire prevention ☒
First aid ☒
Tripping hazards ☒
Equipment inspection and maintenance ☒
Hoisting equipment, winch and crane safety ☒
Ropes, hooks, chains, and slings ☒
Water safety ☒
Boat safety ☒
HAZMAT, Toxic hazards, contaminated sediments, MSDS, respiratory, ventilation _____
Biological hazards (poison ivy, ticks, wasps, mosquitoes etc) _____
Staging, ladders, concrete forms, safety nets, handrails ☒
Hand tools, power tools, machinery, chain saws ☒
Vehicle operation safety _____
Electrical grounding, temporary wiring, GFCI _____
Lockouts/safe clearance procedures _____
Welding, cutting _____
Excavation hazards/rescue _____
Loose rock/steep slopes _____
Explosives _____
Sanitation and waste disposal ☒
Clean-up, trash ☒

Other safety issues of concern specific to contract that was discussed during meeting:

- WEATHER
- VESSEL TRAFFIC

All persons attending meeting the meeting must sign below or on the back of the form.

Contractor Representative Signature
CE Inspector/QA (if present at meeting)



Date: 8/8/17

Date: 8/8/17

WEEKLY SAFETY MEETING

Date Held: 8/17/17
Time: 0730

CONTRACTOR: AECOM Contract No. DACW33-
PERSONNEL PRESENT (check): Contractor ☒ Sub. ☒ Government ☐

SUBJECTS DISCUSSED (check items that were discussed during meeting):

USACE EM385-1-1 ☒ (Specific sections: _____)
On-site Accident Prevention Plan (or Site Safety and Health Plan) ☒
Individual protective equipment (steel-toed boots, safety glasses, etc..) ☒
Prevention of slips/falls ☒
Back injury/safe lifting techniques ☒
Fire prevention ☒
First aid ☒
Tripping hazards ☒
Equipment inspection and maintenance ☒
Hoisting equipment, winch and crane safety ☒
Ropes, hooks, chains, and slings ☒
Water safety ☒
Boat safety ☒
HAZMAT, Toxic hazards, contaminated sediments, MSDS, respiratory, ventilation _____
Biological hazards (poison ivy, ticks, wasps, mosquitoes etc) _____
Staging, ladders, concrete forms, safety nets, handrails ☒
Hand tools, power tools, machinery, chain saws ☒
Vehicle operation safety _____
Electrical grounding, temporary wiring, GFCI _____
Lockouts/safe clearance procedures _____
Welding, cutting _____
Excavation hazards/rescue _____
Loose rock/steep slopes _____
Explosives _____
Sanitation and waste disposal ☒
Clean-up, trash ☒

Other safety issues of concern specific to contract that was discussed during meeting:

*weather
vessel traffic*

All persons attending meeting the meeting must sign below or on the back of the form.

Contractor Representative Signature
CE Inspector/QA (if present at meeting) _____



Date: 8/17/17

Date: _____

Attachment 2 New Haven Harbor 2017 Project SH&E Documentation

Conducted by:	RYAN MCCARTHY	Date Performed:	8/8/17
Topics Discussed:	1. PROJECT KICKOFF		
	2. WEATHER		
	3. SLIP TRIP FALL		
	4. VIBRATION OPS		

[illegible]

Daily Float Plan

Name of vessel's operator:	JEFF PYDESKI
Telephone Number:	908 642 4670
Name of Vessel:	P/V CANDU
Registration No.:	CT 6433 AR
Description of Vessel: Type: Make: Color of Hull/Trim	37' PONTON BOAT TOWER
Most distinguishing identifiable feature:	

Rafts/Dinghies: Number: Size: Color: N/A

Radio: Type: VHF Frequencies Monitored: 13/16

Number of persons onboard: 6

Name: Age: Address & Telephone:

RYAN MCCARTHY / TODD RANDALL

603 770 4945

C. SIEKE HOWE

KEN CADMUS

MORGAN BARRETT

JEFF PYDESKI

Engine Type: ~~CAT~~ H.P.: 150 Normal Fuel Supply (days): 2X

Survival equipment on board: (check as appropriate)

☒ Life Jackets☒ Flares☐ Smoke Signals☒ Medical Kit☐ EPIRB☒ Paddles☒ Anchor☒ Loran/GPS☒ Life Ring

Trip: NEW HAVEN HARBOR

Date & Time of Departure: 8/8/17 0800

Departure From: LONG WHARF PIER

Departure To: NEW HAVEN HARBOR

Expected to arrive by: 1900 In no case later than: 2000

Date & Time of Arrival:

Boat Lead Signature at Arrival:

Boat Safety Checklist

Keep this page with your boat, ready for inspection. By using this checklist, or one fine-tuned by yourself, you'll be sure that everything is on board and in good working order. Your passengers will appreciate knowing you're concerned about boating safety.

☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

☒ Registration certificate or documentation

☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth

☒ Bilge device --bilge pump operable, alternative bailing device available

☒ Watch or clock--operable

☐ Bright flashlight or searchlight

☒ Navigation lights --tested and operable, spare bulbs

☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

☒ Sound-producing device--horn, whistle appropriate for boat

☐ Alternate propulsion--paddle or oar

☒ First Aid Kit

☒ Tools, spare outboard prop and lock nut

☒ Compass

☒ Sunscreen

☒ Weather Radio

Boat: R/V CANDU

Captain's Signature: _____

[Signature]
S. Pydeski

Conducted by:	C Steve Howe	Date Performed:	8/9/17
Topics Discussed:	1. Heat		
	2. slips trips falls		
	3. eyes on water - busy harbor		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:	JEFF PYDESKI
Telephone Number:	908 642 4670
Name of Vessel:	RV CAUDU
Registration No.:	CT 6433 AR
Description of Vessel: Type: Make: Color of Hull/Trim:	37' PONTON TOWER
Most distinguishing identifiable feature:	

Rafts/Dinghies: Number: Size: Color: N/A

Radio: Type: VHF Frequencies Monitored: 13/16

Number of persons onboard:

Name:	Age:	Address & Telephone:
RYAN MCCARTHY		603 770 4945
C STEVE HOWE		
TODD RANDALL		
JEFF PYDESKI		
MORGAN BARRETT		

Engine Type: ATERN H.P.: 50 Normal Fuel Supply (days): 2x
x2 x2

Survival equipment on board: (check as appropriate)

<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input checked="" type="checkbox"/> Paddles
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring

Trip: NEW HAVEN HARBOR

Date & Time of Departure: 8/1/17 0745

Departure From: LONG WHARF ACR

Departure To: NEW HAVEN HARBOR

Expected to arrive by: 1700 In no case later than: _____

Date & Time of Arrival:

Boat Lead Signature at Arrival:

Boat Safety Checklist

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☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

☒ Registration certificate or documentation

☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth

☒ Bilge device --bilge pump operable, alternative bailing device available

☒ Watch or clock--operable

☒ Bright flashlight or searchlight

☒ Navigation lights --tested and operable, spare bulbs

☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

☒ Sound-producing device--horn, whistle appropriate for boat

☒ Alternate propulsion--paddle or oar

☒ First Aid Kit

☒ Tools, spare outboard prop and lock nut

8/9/17

☒ Compass

☒ Sunscreen

☒ Weather Radio

Boat: YU 1 ANDU Captain's Signature: 

Conducted by:	C Steve Bone Jeff Rydeski	Date Performed:	8/10/17
Topics Discussed:	1. Vessel safety refresher - new crew member		
	2. Lifting		
	3.		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:	Jeff Pydesk	
Telephone Number:	908 642 4670	
Name of Vessel:	RV Candu	
Registration No.:	CT 6433 AR	
Description of Vessel:	37' Pontoon	
Type:	Tower	
Make:		
Color of Hull/Trim		
Most distinguishing identifiable feature:		
Rafts/Dinghies: Number:	Size:	Color:
	N/A	
Radio: Type:	Frequencies Monitored:	
	13/16	
Number of persons onboard:		
Name:	Age:	Address & Telephone:
C. Steve Hane		603 520-0169
Clare Murphy-Hagan		
Todd Randall		
Jeff Pydesk		
Morgan Barrett		
Engine Type: <u>outboard</u> H.P.: <u>150</u> Normal Fuel Supply (days): <u>2X</u>		
Survival equipment on board: (check as appropriate)		
<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input checked="" type="checkbox"/> Paddles
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring
Trip: <u>New Haven Harbor</u>		
Date & Time of Departure: <u>8/9/17 0740</u>		
Departure From: <u>Long Wharf Pier</u>	Departure To: <u>New Haven Harbor</u>	
Expected to arrive by: <u>1900</u> In no case later than: _____		
Date & Time of Arrival:		Boat Lead Signature at Arrival:

Boat Safety Checklist

Keep this page with your boat, ready for inspection. By using this checklist, or one fine-tuned by yourself, you'll be sure that everything is on board and in good working order. Your passengers will appreciate knowing you're concerned about boating safety.

- ☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat
- ☒ Registration certificate or documentation
- ☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted
- ☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible
- ☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB
- ☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth
- ☒ Bilge device --bilge pump operable, alternative bailing device available
- ☒ Watch or clock--operable
- ☒ Bright flashlight or searchlight
- ☒ Navigation lights --tested and operable, spare bulbs
- ☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down
- ☒ Sound-producing device--horn, whistle appropriate for boat
- ☒ Alternate propulsion--paddle or oar
- ☒ First Aid Kit
- ☒ Tools, spare outboard prop and lock nut
- ☒ Compass
- ☒ Sunscreen
- ☒ Weather Radio

Boat: M/V CADE Captain's Signature: [Signature]

Conducted by:	Steve Hale Jeff Pydeski	Date Performed:	8/11/17
Topics Discussed:	1. Co-Work: coring & processing		
	2. Recreational Boating		
	3.		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:	Jeff Rydesk.		
Telephone Number:	908 642 4670		
Name of Vessel:	R/V Can Du		
Registration No.:	CT 6433 AR		
Description of Vessel:	37' Pontoon Boat		
Type:	Tuner		
Make:			
Color of Hull/Trim			
Most distinguishing identifiable feature:			
Rafts/Dinghies: Number:	Size:	Color:	NA
Radio: Type: VHF	Frequencies Monitored:	13/16	
Number of persons onboard:	5		
Name:	Age:	Address & Telephone:	
C. Steve Howe	AGE 60	603 520 0169	
Clare Murphy	Hagan AGE 60		
Morgan Barrett	OSI		
Jeff Rydesk	OSI		
Todd Randall	USACE		
Engine Type: outboard	H.P.: 150	Normal Fuel Supply (days):	2x
Survival equipment on board: (check as appropriate)			
<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals	
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input checked="" type="checkbox"/> Paddles	
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring	
Trip:	New Haven Harbor		
Date & Time of Departure:	8/11/17		
Departure From:	Long Wharf Pier	Departure To:	New Haven Harbor
Expected to arrive by:	1900	In no case later than:	2000
Date & Time of Arrival:	8/11/17		
Boat Lead Signature at Arrival:			

Boat Safety Checklist

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☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

☒ Registration certificate or documentation

☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth

☒ Bilge device --bilge pump operable, alternative bailing device available

☒ Watch or clock--operable

☒ Bright flashlight or searchlight

☒ Navigation lights --tested and operable, spare bulbs

☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

☒ Sound-producing device--horn, whistle appropriate for boat

☒ Alternate propulsion--paddle or oar


☒ First Aid Kit

☒ Tools, spare outboard prop and lock nut

☒ Compass

☒ Sunscreen

☒ Weather Radio

Boat: Can Du Captain's Signature: 



Conducted by:	Rachel MacPhee Jeff Pydeski	Date Performed:	02/12/17
Topics Discussed:	1. Vessel safety		
	2. Lifting		
	3.		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:		Jeff Rydski	
Telephone Number:		908 612 4670	
Name of Vessel:		RV Candu	
Registration No.:		CT 6433 AR	
Description of Vessel: Type: Make: Color of Hull/Trim		37' Pontoon tower	
Most distinguishing identifiable feature:			
Rafts/Dinghies: Number:	Size:	Color:	N/A
Radio: Type:	Frequencies Monitored: 13/16		
Number of persons onboard:			
Name:	Age:	Address & Telephone:	
Rachel MacPhee		978-877-9436	
Jeff Rydski			
Morgan Barrett			
Mark Smith			
Engine Type: Outboard H.P.: 150 Normal Fuel Supply (days): 28			
Survival equipment on board: (check as appropriate)			
<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals	
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input checked="" type="checkbox"/> Paddles	
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring	
Trip: New Haven harbor			
Date & Time of Departure: 8/12/17 0805		Departure To: New Haven harbor	
Departure From: Long Wolf Riv			
Expected to arrive by: 1900 In no case later than:			
Date & Time of Arrival: 8/12/17		Boat Lead Signature at Arrival:	

Boat Safety Checklist

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✓ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

✓ Registration certificate or documentation

✓ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

✓ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

✓ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

✓ Anchors and Line--adequate anchor for bottom, adequate line for water depth

✓ Bilge device --bilge pump operable, alternative bailing device available

✓ Watch or clock--operable

✓ Bright flashlight or searchlight

✓ Navigation lights --tested and operable, spare bulbs

✓ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

✓ Sound-producing device--horn, whistle appropriate for boat

✓ Alternate propulsion--paddle or oar

✓ First Aid Kit

✓ Tools, spare outboard prop and lock nut

✓ Compass

✓ Sunscreen

✓ Weather Radio

Boat: HPU Candu

Captain's Signature: [Signature]

Conducted by:	R. MacPhee	Date Performed:	08/13/17
Topics Discussed:	1. Boat safety		
	2. Heat stress		
	3. Fatigue		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator

Telephone Number

Name of Vessel:

Registration No.:

Description of Vessel:

Type

Make

Color of Hull/Trim

Most distinguishing identifiable feature:

Rafts/Dinghies: Number: Size: Color:

Radio: Type: Frequencies Monitored:

Number of persons onboard:

Name:

Age:

Address & Telephone:

Rachel Machee

978-877-9436

Jeff Pydeski

Morgan Barrett

Marc Smith

Engine Type: Outboard H.P.: 150 Normal Fuel Supply (days): 2X

Survival equipment on board: (check as appropriate)



Life Jackets



Flares



Smoke Signals



Medical Kit



EPIRB



Paddles



Anchor



Loran/GPS



Life Ring

Trip:

New haven harbor

Date & Time of Departure:

08/12/17 0805

Departure From:

Long Wolf Pt

Departure To:

New haven harbor

Expected to arrive by:

1900

In no case later than:

2100

Date & Time of Arrival:

08/13/17

Boat Lead Signature at Arrival:

Boat Safety Checklist

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✓ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

✓ Registration certificate or documentation

✓ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

✓ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

✓ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

✓ Anchors and Line--adequate anchor for bottom, adequate line for water depth

✓ Bilge device --bilge pump operable, alternative bailing device available

✓ Watch or clock--operable

✓ Bright flashlight or searchlight

✓ Navigation lights --tested and operable, spare bulbs

✓ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

✓ Sound-producing device--horn, whistle appropriate for boat

✓ Alternate propulsion--paddle or oar

✓ First Aid Kit

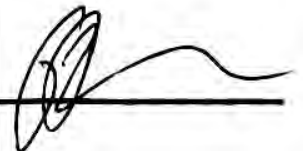
✓ Tools, spare outboard prop and lock nut

✓ Compass

✓ Sunscreen

✓ Weather Radio

Boat: RV Candu Captain's Signature: _____



Conducted by:	Jeff Rydicki C. Steve Howe	Date Performed:	8/14/17
Topics Discussed:	1. Pace		
	2. Complacency		
	3.		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:	Jeff Pydeski
Telephone Number:	908 642 4670
Name of Vessel:	RV Candu
Registration No.:	CT 6433 AR
Description of Vessel:	37' Pontoon
Type:	
Make:	
Color of Hull/Trim	
Most distinguishing identifiable feature:	Tower

Rafts/Dinghies: Number:	Size:	Color:	NA
Radio: Type:	Frequencies Monitored:	12/16	

Number of persons onboard:		
Name:	Age:	Address & Telephone:
C. Steve Hone		603-520-0169
Jeff Pydeski		
Morgan Barrett		
Marc Smith		

Engine Type: outboard H.P.: 150 Normal Fuel Supply (days): 2x
x2 x2

Survival equipment on board: (check as appropriate)

<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input checked="" type="checkbox"/> Paddles
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring

Trip: New Haven Harbor
 Date & Time of Departure: 8/14/17 0730
 Departure From: Long Wharf Pier Departure To: New Haven Harbor
 Expected to arrive by: 1900 In no case later than: 2000

Date & Time of Arrival: Boat Lead Signature at Arrival:

Boat Safety Checklist

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☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

☒ Registration certificate or documentation

☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth

☒ Bilge device --bilge pump operable, alternative bailing device available

☒ Watch or clock--operable

☒ Bright flashlight or searchlight

☒ Navigation lights --tested and operable, spare bulbs

☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

☒ Sound-producing device--horn, whistle appropriate for boat

☒ Alternate propulsion--paddle or oar

☒ First Aid Kit

☒ Tools, spare outboard prop and lock nut

☒ Compass

☒ Sunscreen

☒ Weather Radio

Boat: Car Du Captain's Signature: 

Conducted by:	Jeff Pydeski C-Store Home	Date Performed:	8/15/17
Topics Discussed:	1. Walking - pick up feet		
	2. Heat - stay cool & hydrated		
	3.		
	4.		

[illegible]

AZCOM**Daily Boat Plan**

Name of vessel's operator

Telephone Number

Name of Vessel:

Registration No..

Description of Vessel:

Type:

Make:

Color of Hull/Trim

Most distinguishing identifiable feature:

Jeff Rydick
908 642 4670
RV Candu
CT 6433 AR
37' Pombo
Tower

Rafts/Dinghies: Number: Size: Color:

Radio: Type: Frequencies Monitored: 13/16

Number of persons onboard: 4

Name:

Age: Address & Telephone:

C. Steve Hare
Jeff Rydick
Kevin Murphy
Clare Murphy Hagan

603 520 0169

Engine Type: outboard H.P. 2x 150 Normal Fuel Supply (days): 2x

Survival equipment on board: (check as appropriate)



Life Jackets



Flares



Smoke Signals



Medical Kit



EPIRB



Paddles



Anchor



Loran/GPS



Life Ring

Trip:

New Haven Harbor

Date & Time of Departure:

8/12/17 0745

Departure From:

Long Wharf Pier

Departure To:

Expected to arrive by: 1900

In no case later than: 2000

Date & Time of Arrival:

8/15/17

Boat Lead Signature at Arrival

Boat Safety Checklist

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☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

☒ Registration certificate or documentation

☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth

☒ Bilge device --bilge pump operable, alternative bailing device available

☒ Watch or clock--operable

☒ Bright flashlight or searchlight

☒ Navigation lights --tested and operable, spare bulbs

☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

☒ Sound-producing device--horn, whistle appropriate for boat

☒ Alternate propulsion--paddle or oar

☒ First Aid Kit

☒ Tools, spare outboard prop and lock nut

☒ Compass

☒ Sunscreen

☒ Weather Radio

Boat

Can Du

Captain's Signature: _____

[Signature]

Conducted by:	Jeff Pydeski C. Steve Howe	Date Performed:	8/16/17
Topics Discussed:	1. Heat Stress		
	2. General boat deck safety		
	3.		
	4.		

[illegible]

Daily Float Plan

Name of vessel's operator:	Jeff Rydesh		
Telephone Number:	908 642 4670		
Name of Vessel:	R/L Can Du		
Registration No.:	CT 6433 AR		
Description of Vessel:	37' Pontoon Boat Tower		
Type:			
Make:			
Color of Hull/Trim			
Most distinguishing identifiable feature:			
Rafts/Dinghies: Number: Size: Color: NA			
Radio: Type: VHF Frequencies Monitored: 1316			
Number of persons onboard: 4			
Name:	Age:	Address & Telephone:	
C. Steve Howe		603-520-0169	
Clare Murphy-Hagan			
Jeff Rydesh			
Kevin Murphy			
Engine Type: <u>outboard</u> H.P.: <u>150</u> Normal Fuel Supply (days): <u>2x</u>			
Survival equipment on board: (check as appropriate)			
<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals	
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input type="checkbox"/> Paddles	
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring	
Trip: <u>New Haven Harbor</u>			
Date & Time of Departure: <u>8/16/17 0745</u>			
Departure From: <u>Long wharf Pier</u>		Departure To:	
Expected to arrive by: <u>1900</u> In no case later than: <u>2000</u>			
Date & Time of Arrival: <u>8/16/17 1820</u>		Boat Lead Signature at Arrival: <u>[Signature]</u>	

Boat Safety Checklist

Keep this page with your boat, ready for inspection. By using this checklist, or one fine-tuned by yourself, you'll be sure that everything is on board and in good working order. Your passengers will appreciate knowing you're concerned about boating safety.

- ☒ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat
- ☒ Registration certificate or documentation
- ☒ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted
- ☒ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible
- ☒ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB
- ☒ Anchors and Line--adequate anchor for bottom, adequate line for water depth
- ☒ Bilge device --bilge pump operable, alternative bailing device available
- ☒ Watch or clock--operable
- ☒ Bright flashlight or searchlight
- ☒ Navigation lights --tested and operable, spare bulbs
- ☒ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down
- ☒ Sound-producing device--horn, whistle appropriate for boat
- ☒ Alternate propulsion--paddle or oar
- ☒ First Aid Kit
- ☒ Tools, spare outboard prop and lock nut
- ☒ Compass
- ☒ Sunscreen
- ☒ Weather Radio

Boat:

Car Du

Captain's Signature:

[Signature]



Conducted by:	RYAN MCCARTHY	Date Performed:	8/17/17
Topics Discussed:	1. WEATHER		
	2. OFFSHORE OPS		
	3. HOUSEKEEPING		
	4. SCIP TRIP FALL		

[illegible]



Pre-Entry Briefing/Daily Safety Meeting Attendance Form
New Haven Harbor FNP
Sediment/ Water Sampling/ New Haven, CT

Conducted by:	C. Stephen Howe	Date Performed:	08/17/17 0745 See project log-book
Topics Discussed:	1. Multiple vessels		
	2. New sampling techniques		
	3.		
	4.		

Note: Dockside SH&E briefing was held however, original field signature form was destroyed.

[illegible]

Daily Float Plan

Name of vessel's operator:		KEN CADMUS	
Telephone Number:		860 395 8112	
Name of Vessel:		P/V READY II	
Registration No.:		CT 8934 AX	
Description of Vessel: Type: Make: Color of Hull/Trim		25' PARKER FORWARD CABIN	
Most distinguishing identifiable feature:			
Rafts/Dinghies: Number: Size: Color: M/A			
Radio: Type: VHF Frequencies Monitored: 13/16			
Number of persons onboard: 3			
Name:		Age:	Address & Telephone:
LYAN MCARTHY			603 770 4945
KEN CADMUS			
MIKE LINCOLN			
Engine Type: <u>YAMAHA</u> H.P.: <u>150</u> Normal Fuel Supply (days): <u>3x</u> <u>X2</u>			
Survival equipment on board: (check as appropriate)			
<input checked="" type="checkbox"/> Life Jackets	<input checked="" type="checkbox"/> Flares	<input type="checkbox"/> Smoke Signals	
<input checked="" type="checkbox"/> Medical Kit	<input type="checkbox"/> EPIRB	<input type="checkbox"/> Paddles	
<input checked="" type="checkbox"/> Anchor	<input checked="" type="checkbox"/> Loran/GPS	<input checked="" type="checkbox"/> Life Ring	
Trip: <u>CLDS / NEW HAVEN HARBOR</u>			
Date & Time of Departure: <u>8/17/17 0730</u>			
Departure From: <u>BEANFORD DAM</u>		Departure To: <u>CLDS / NHH</u>	
Expected to arrive by: <u>1900</u> In no case later than: <u>2000</u>			
Date & Time of Arrival:		Boat Lead Signature at Arrival:	

Daily Float Plan

Name of vessel's operator:

Jeff Rydestk.

Telephone Number:

908 642-4670

Name of Vessel:

Can Du

Registration No.:

CT6133 AR

Description of Vessel:

Type:

Make:

Color of Hull/Trim

31' Pontoon

Most distinguishing identifiable feature:

Tower

Rafts/Dinghies: Number: Size: Color:

NA

Radio: Type: VHF Frequencies Monitored: 13/16

Number of persons onboard:

Name:

Age:

Address & Telephone:

C. Steve Hone

603-520-0169

Clare Murphy-Hagan

Jeff Rydestk.

Kevin Murphy

Engine Type: outboard H.P.: 2x150 Normal Fuel Supply (days): 2x

Survival equipment on board: (check as appropriate)



Life Jackets



Flares



Smoke Signals



Medical Kit



EPIRB



Paddles



Anchor



Loran/GPS



Life Ring

Trip:

New Haven Harbor

Date & Time of Departure:

8/17/17

0745

Departure From:

Long Wharf Pier

Departure To:

New Haven Harbor

Expected to arrive by:

1900

In no case later than:

2000

Date & Time of Arrival:

1811

Boat Lead Signature at Arrival:

Boat Safety Checklist

page with your boat, ready for inspection. By using this checklist, or one fine-tuned by yourself, ensure that everything is on board and in good working order. Your passengers will appreciate you're concerned about boating safety.

Plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

Registration certificate or documentation

Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, readily accessible

Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

Anchor and Line--adequate anchor for bottom, adequate line for water depth

Bilge Pump device --bilge pump operable, alternative bailing device available

Compass or clock--operable

Hand flashlight or searchlight

Navigation lights --tested and operable, spare bulbs

Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

Sound-producing device--horn, whistle appropriate for boat

Alternate propulsion--paddle or oar

First Aid Kit

Tools, spare outboard prop and lock nut

Compass

Sunscreen

Weather Radio

Boat: Canda

Captain's Signature: _____



Boat Safety Checklist

Keep this page with your boat, ready for inspection. By using this checklist, or one fine-tuned by yourself, you'll be sure that everything is on board and in good working order. Your passengers will appreciate knowing you're concerned about boating safety.

✓ Float plan--let a friend or relative know when you're leaving, where you're going, when you expect to return, what to do if you don't, and a description of your boat

✓ Registration certificate or documentation

✓ Personal Flotation Devices (wearable and throw able)--USCG approved, good condition, readily accessible, assigned and fitted

✓ Fire Extinguishers--right number, size, and class for boat; charged, not corroded, nozzle clear, bracketed, readily accessible

✓ Visual Distress Signals--current dates on flares, proper number, batteries good if lights or EPIRB

✓ Anchors and Line--adequate anchor for bottom, adequate line for water depth

✓ Bilge device --bilge pump operable, alternative bailing device available

✓ Watch or clock--operable

✓ Bright flashlight or searchlight

✓ Navigation lights --tested and operable, spare bulbs

✓ Batteries--fully charged, encased in plastic boxes or terminals covered, securely fastened down

✓ Sound-producing device--horn, whistle appropriate for boat

✓ Alternate propulsion--paddle or oar

✓ First Aid Kit

✓ Tools, spare outboard prop and lock nut

✓ Compass

✓ Sunscreen


✓ Weather Radio

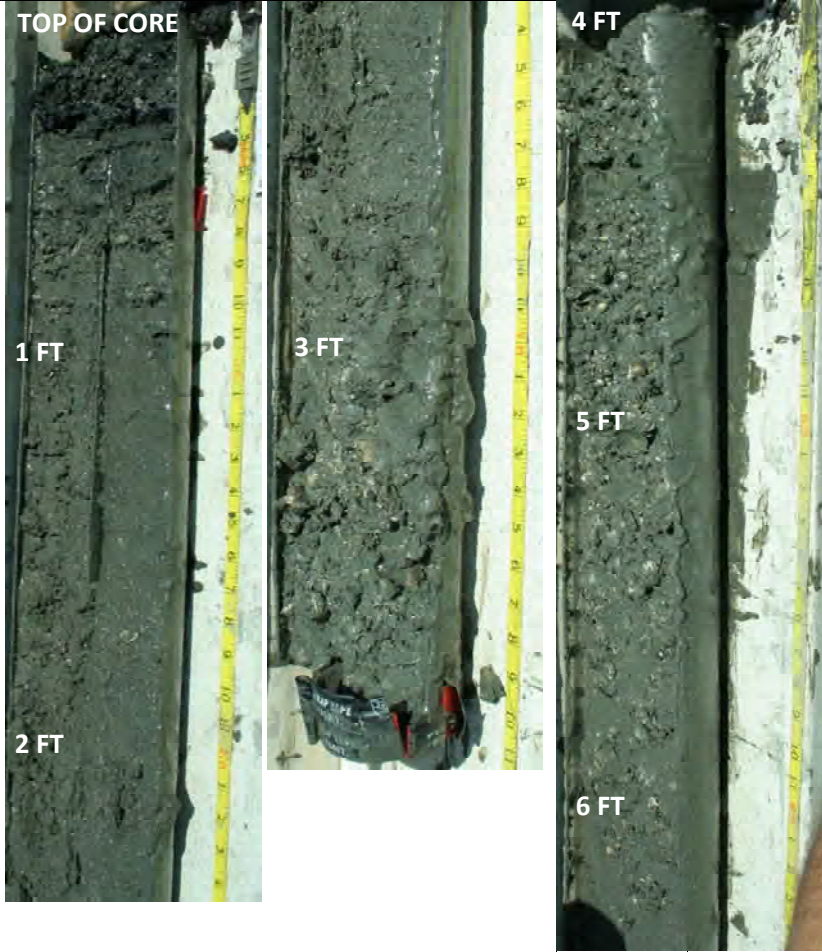
Boat: RV Lady II Captain's Signature: Ken Carlson

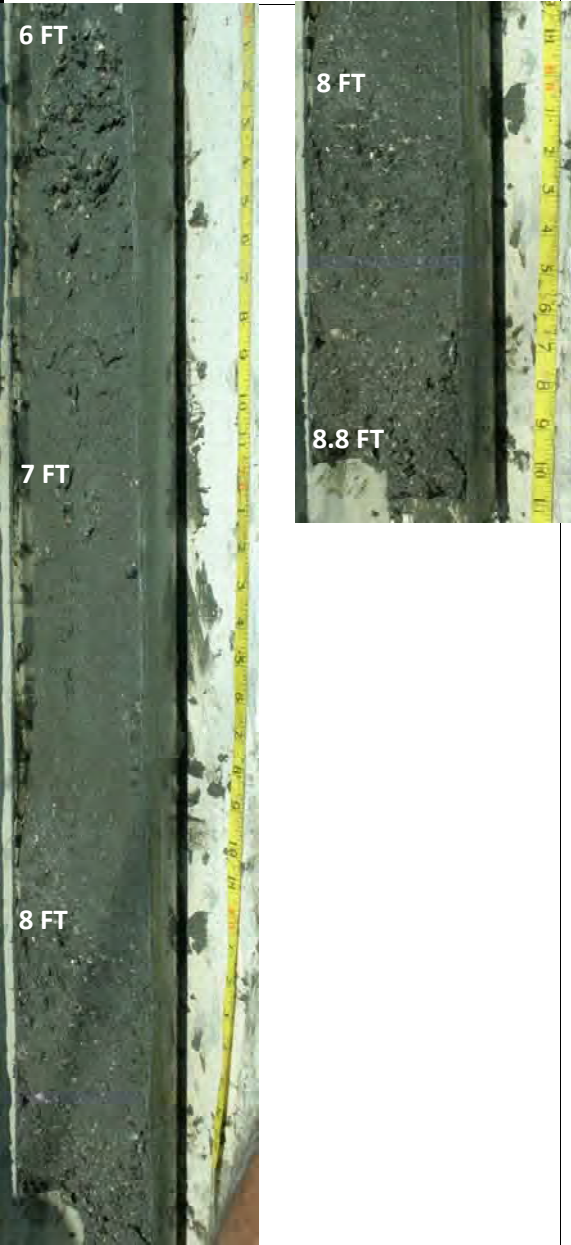
Attachment 3 New Haven Harbor 2017 Core Logs

Includes Core Logs from Archeological Cores

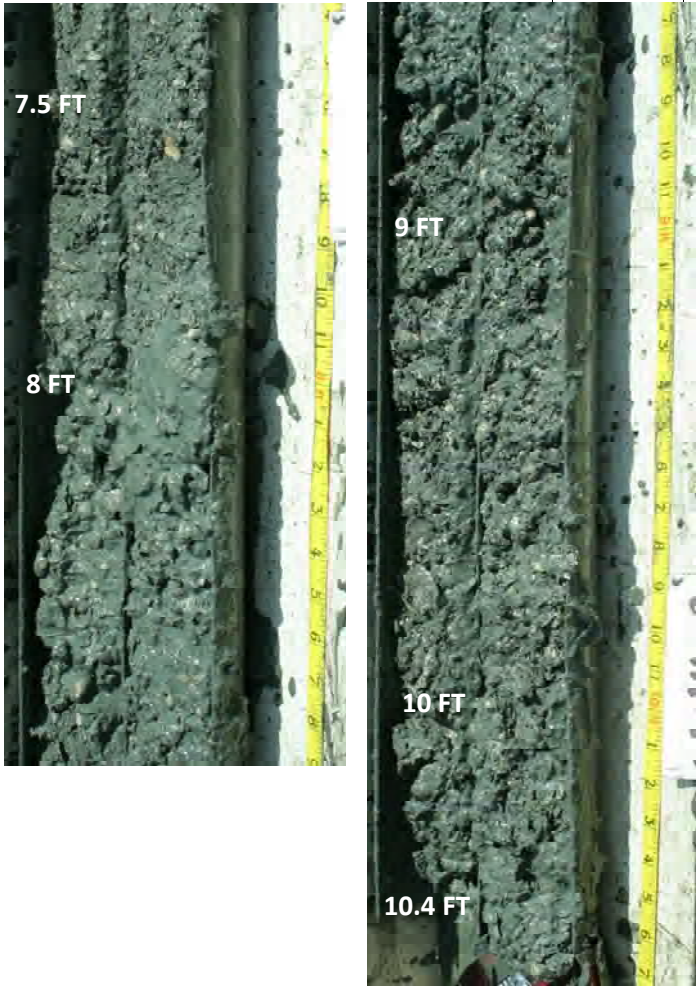
Core ID: NHH-A			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/7/2017
Client:	USACE	X: 955707.36	Time: 13:10
Subcontractor:	Ocean Surveys Inc.	Y: 641917.44	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 13
Weather:	Partly Cloudy, 75°F		Recovery (ft): 11
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-28.7
Photo:		Notes:	
		<p>0 - 2.2' - Dark grey fine/ medium sand with trace silt and shells. SW-SM</p> <p>2.2' - 6.2' - Tan fine/ medium sand with shells. SP</p> <p>6.2' - 7.7' - Tan fine/ medium sand. SP</p>	
Comments: Samples collected at 0-2.2' (chemistry / GS) and 2.2-9.9' (GS only)			

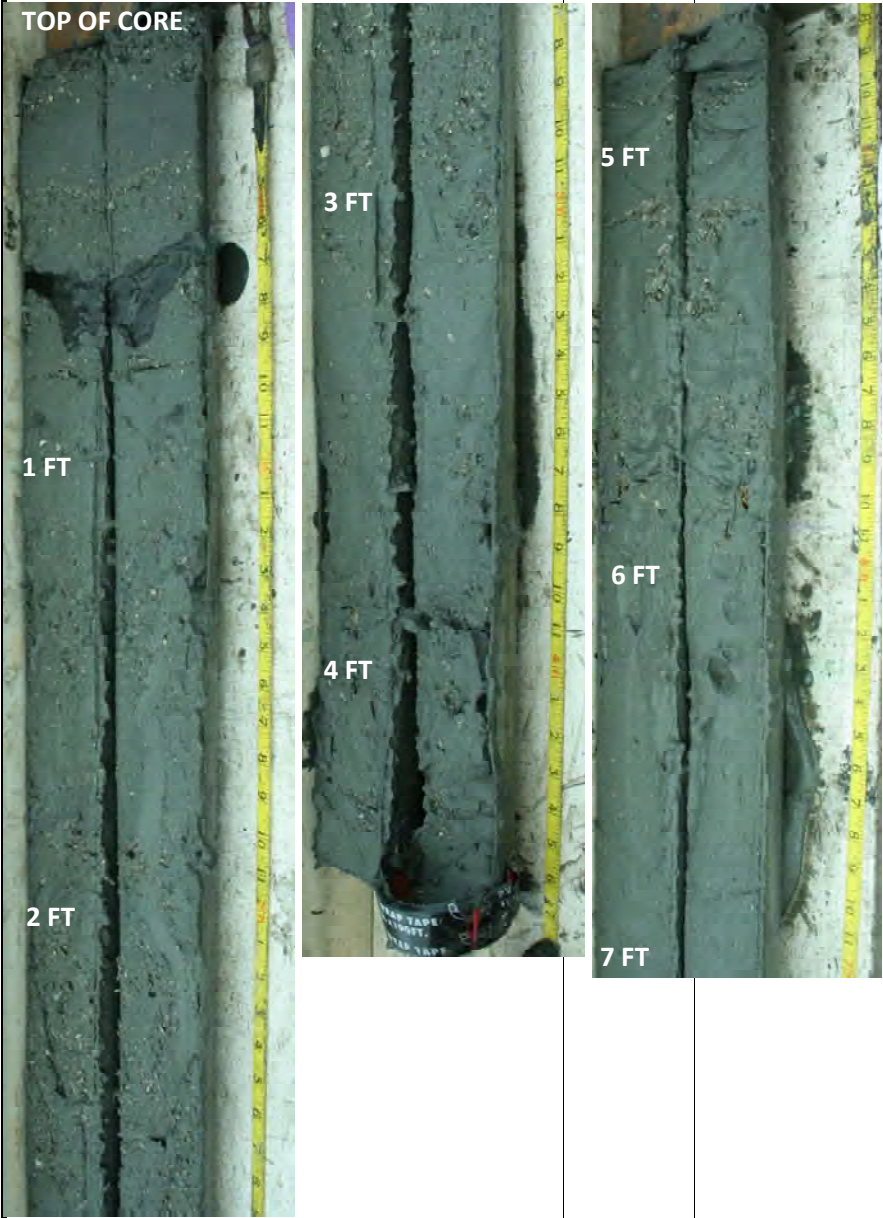
Core ID: NHH-A			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/7/2017
Client:	USACE	X: 955707.36	Time: 13:10
Subcontractor:	Ocean Surveys Inc.	Y: 641917.44	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 13
Weather:	Partly Cloudy, 75°F		Recovery (ft): 11
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-28.7
Photo:		Notes:	
		<p>7.7' - 11.0' - Tan fine/ medium sand. SP</p>	
Comments:			

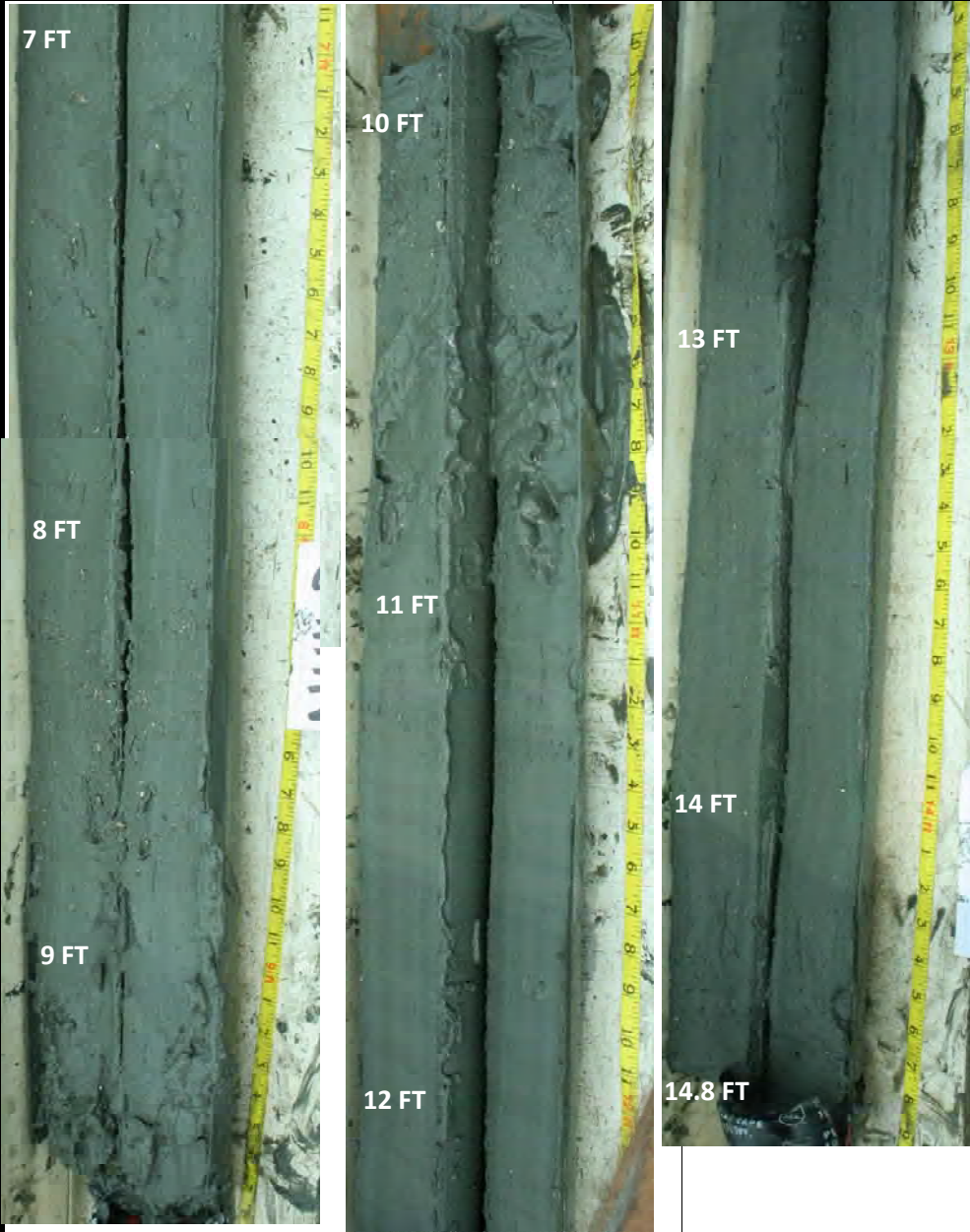
Core ID: NHH-B			
Project:	New Haven Harbor FNP	Coordinates (CT FT)	Date: 8/11/2017
Client:	USACE	X: 955995.61	Time: 11:43
Subcontractor:	Ocean Surveys Inc.	Y: 642051.34	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 9
Weather:	Sunny, 77°F		Recovery (ft): 8.8
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -39.8
Photo:			Notes:
		<p>0-0.3' - Black silty fine sand with shell hash. SM</p> <p>0.3-3.2' - Dark grey silty fine sand with some shell hash. SM</p> <p>3.2-6.4' - Dark grey silty fine to medium sand with shell hash. SM</p>	
Comments: Samples collected at 0-4.2' (chemistry / GS).			




Core ID: NHH-B			
Project:	New Haven Harbor FNP	Coordinates (CT FT)	Date: 8/11/2017
Client:	USACE	X: 955995.61	Time: 11:43
Subcontractor:	Ocean Surveys Inc.	Y: 642051.34	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 9
Weather:	Sunny, 77°F		Recovery (ft): 8.8
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -39.8
Photo:		Notes:	
		<p>6.0-6.4' - Dark grey silty fine to medium sand with shell hash. SM</p> <p>6.4-7.9' - Dark grey sandy silt. SM</p> <p>7.9-8.6' - Dark brown fine to medium sand with silt. SW-SM</p> <p>8.6-8.8' - Dark brown medium to coarse sand with shells. SW</p>	
Comments:			

Core ID: NHH-C			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 956248.06	Time: 10:13
Subcontractor:	Ocean Surveys Inc.	Y: 642180.93	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 15
Weather:	Sunny, 77°F		Recovery (ft): 15.5
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-35.3
Photo:		Notes:	
		<p>0-0.8' - Dark grey silty sand with shell hash. SM</p> <p>0.8-2.2' - Dark grey silty fine to medium sand. SM</p> <p>2.2-2.8' - Dark grey silty fine to medium sand with many shells. SM</p> <p>2.8-5.4' - Dark grey fine to medium sandy silt with bands of shells. ML</p> <p>5.4-7.5' - Dark grey fine to medium sandy silt with shells. ML</p>	
Comments: Samples collected at 0-2.8' (chemistry / GS) and 2.8-8.0' (chemistry /GS)			

Core ID: NHH-C			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 956248.06	Time: 10:13
Subcontractor:	Ocean Surveys Inc.	Y: 642180.93	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 15
Weather:	Sunny, 77°F		Recovery (ft): 15.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.3
Photo:		Notes:	
		<p>7.5-8.0' - Dark grey fine to medium sandy silt with shells. ML</p> <p>8.0-10.4'- Dark grey silt with lots of shell hash and some sand. ML</p>	
Comments:			

Core ID: NHH-D			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954353.17	Time: 14:51
Subcontractor:	Ocean Surveys Inc.	Y: 651157.56	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 19.5
Weather:	Sunny, 77°F		Recovery (ft): 19.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -18
Photo:		Notes:	
		<p>0-4.8' - Dark grey silty clay with intermittent shell hash. CL</p> <p>4.8-5.4' - Medium grey clay with shell hash. CL.</p> <p>5.4-7.0 - Dark grey silt with some fine to medium sand. ML.</p>	
Comments: Samples collected at 0-4.8' (chemistry / GS) and 4.8-10.3' (chemistry/ GS)			


Core ID: NHH-D			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954353.17	Time: 14:51
Subcontractor:	Ocean Surveys Inc.	Y: 651157.56	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 19.5
Weather:	Sunny, 77°F		Recovery (ft): 19.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -18
Photo:		Notes:	
		<p>7.0-14.8' - Dark grey silt with some fine to medium sand. ML.</p>	
Comments:			

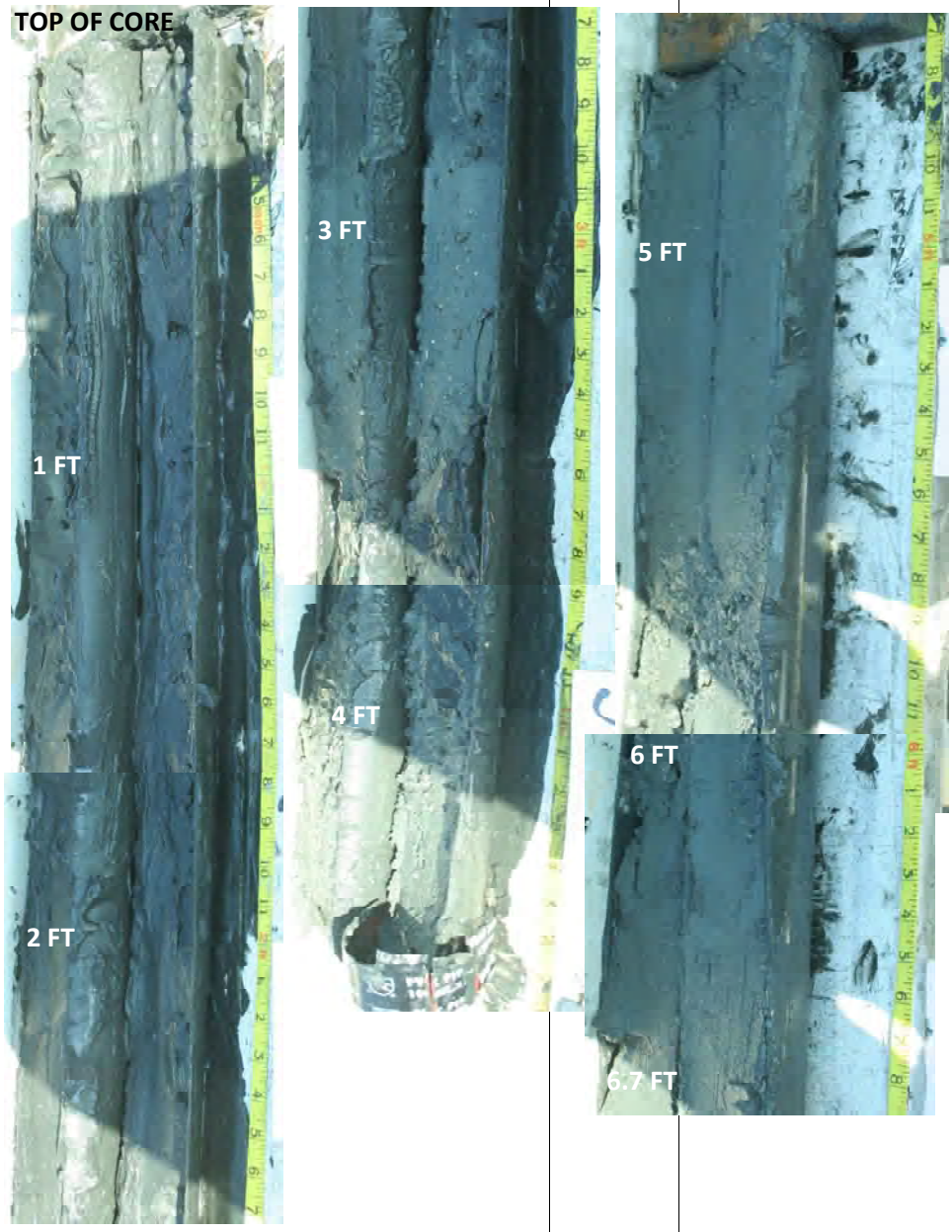
Core ID: NHH-D			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954353.17	Time: 14:51
Subcontractor:	Ocean Surveys Inc.	Y: 651157.56	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 19.5
Weather:	Sunny, 77°F		Recovery (ft): 19.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -18
Photo:		Notes:	
			
			
		<p>14.8-19.5' - Dark grey silt with some fine to medium sand. ML</p>	
Comments:			

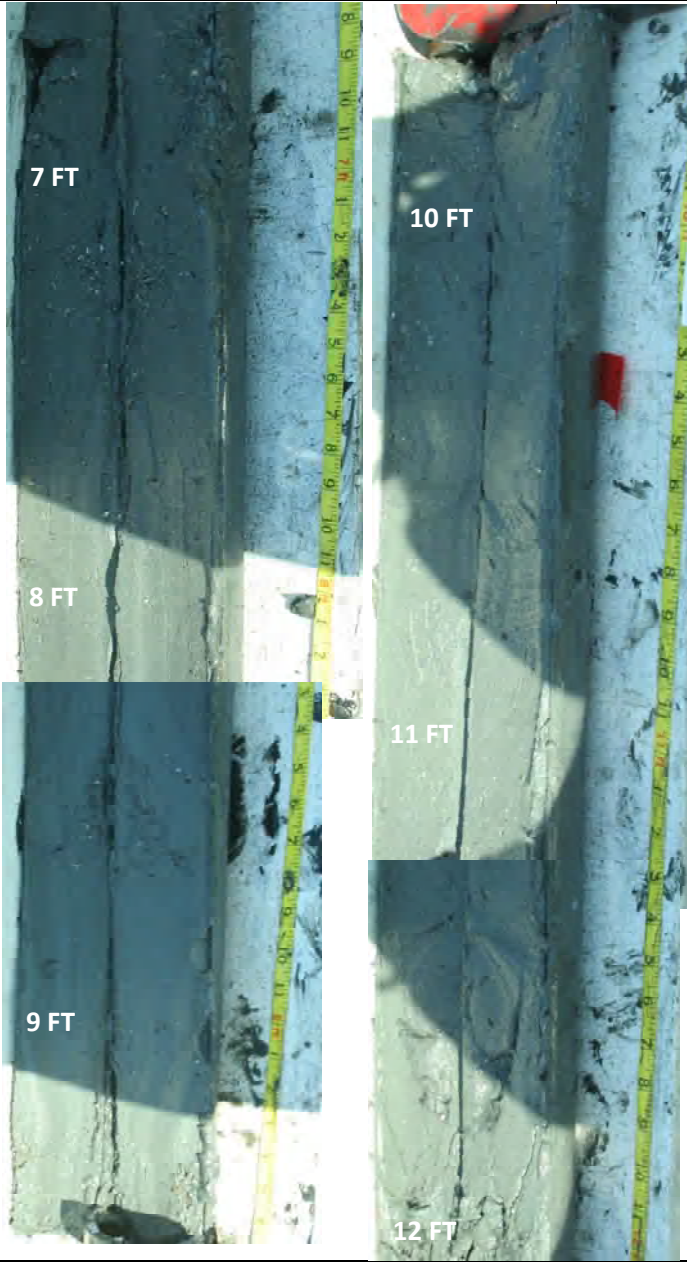

Core ID: NHH-E			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/14/2017
Client:	USACE	X: 954719.81	Time: 8:14
Subcontractor:	Ocean Surveys Inc.	Y: 651097.16	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Cloudy, 79°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.9
Photo:		Notes:	
		<p>0-4.8' - Dark black fine silt. ML</p> <p>4.8-5.8' - Dark grey silt. ML</p> <p>5.8-6.5' - Darker grey silt. ML</p> <p>6.5-7.1' - Black fine silt. ML</p>	
Comments: Top horizon (0-0.8') photo did not save on camera. Samples collected at 0-6.5' (chemistry / GS) and 6.5-8.1' (chemistry/ GS)			


Core ID: NHH-E			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/14/2017
Client:	USACE	X: 954719.81	Time: 8:14
Subcontractor:	Ocean Surveys Inc.	Y: 651097.16	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Cloudy, 79°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.9
Photo:			Notes:
		<div style="border: 1px solid black; padding: 10px; min-height: 400px;"> <p>7.0-9.8' - Dark grey fine silt. ML</p> </div>	
Comments: Top horizon (0-0.8') photo did not save on camera.			


Core ID: NHH-F			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954918.3	Time: 16:25
Subcontractor:	Ocean Surveys Inc.	Y: 651077.63	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 17
Weather:	Sunny, 77°F		Recovery (ft): 16.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -17.7
Photo:			Notes:
		<p>0-6.6' - Dark black to dark grey fine silt with some sand (fine to coarse). Very soft to soft, wet to moist. ML</p>	
Comments: Samples collected at 0-3.2' (chemistry / GS [dup]) and 3.2-10.5' (chemistry/ GS)			

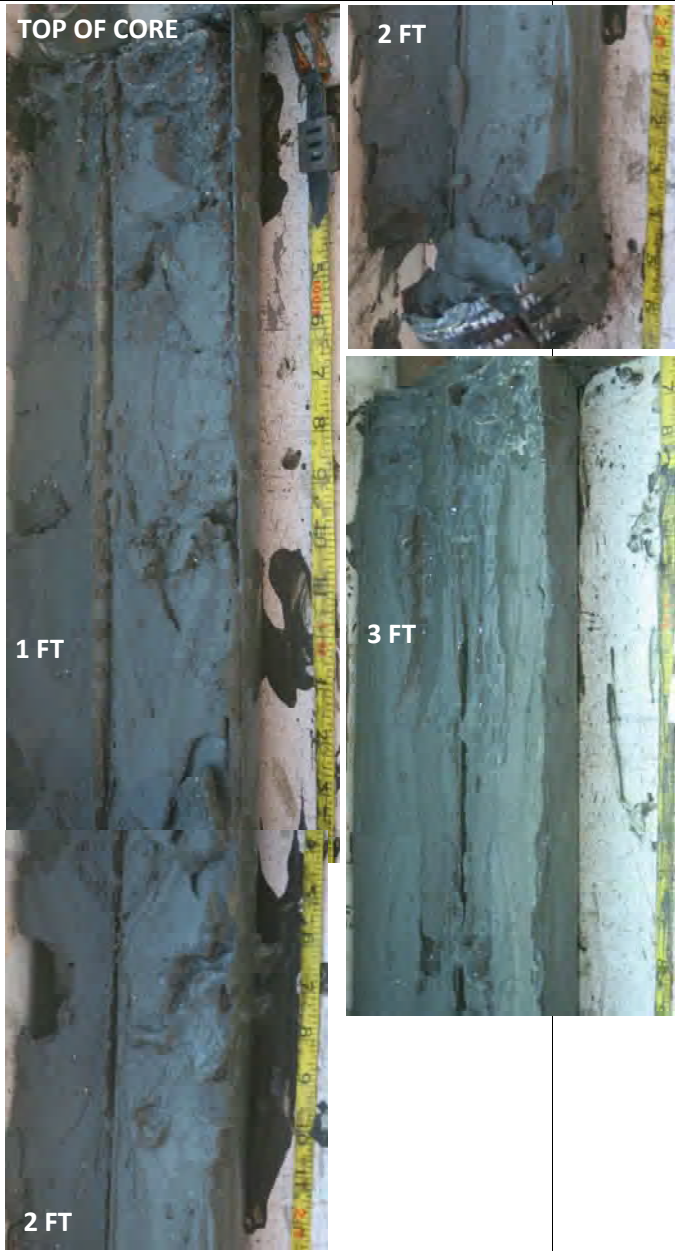

Core ID: NHH-F			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954918.3	Time: 16:25
Subcontractor:	Ocean Surveys Inc.	Y: 651077.63	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 17
Weather:	Sunny, 77°F		Recovery (ft): 16.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -17.7
Photo:			Notes:
			<p>6.6-11.5' - Dark black to dark grey fine silt with some sand (fine to coarse). Very soft to soft, wet to moist. ML</p> <p>Lense of grey clay at 10.5'. CL</p> <p>No plasticity to low plasticity with depth.</p>
Comments:			





Core ID: NHH-G			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954957.69	Time: 8:17
Subcontractor:	Ocean Surveys Inc.	Y: 656295.81	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Sunny, 77°F		Recovery (ft): 19.6
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -15.9
Photo:		Notes:	
		<p>0-2.8' - Black to dark grey sandy silt. ML</p> <p>2.8-3.7' - Dark grey sandy silt. ML</p> <p>3.7-4.3' - Darker grey sandy silt with intermittent shell hash. ML</p> <p>Not plastic.</p> <p>4.3-5.7' - Dark grey silt with some sand. ML</p> <p>5.7-6.2' - Grey sandy silt with shell hash. ML</p> <p>6.2-6.7' - Dark grey silt with some sand and trace clay. ML</p>	
Comments: Samples collected at 0-4.3' (chemistry / GS) and 4.3-13.7' (chemistry/ GS)			






Core ID: NHH-G			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/11/2017
Client:	USACE	X: 954957.69	Time: 8:17
Subcontractor:	Ocean Surveys Inc.	Y: 656295.81	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Sunny, 77°F		Recovery (ft): 19.6
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -15.9
Photo:			Notes:
			<p>6.7-9.6' - Dark grey silt with some sand and trace clay and shell hash. ML</p> <p>9.6-14.7' - Dark grey compact silt with occasional shell hash. ML</p> <p>Not plastic to low plasticity.</p>
Comments:			


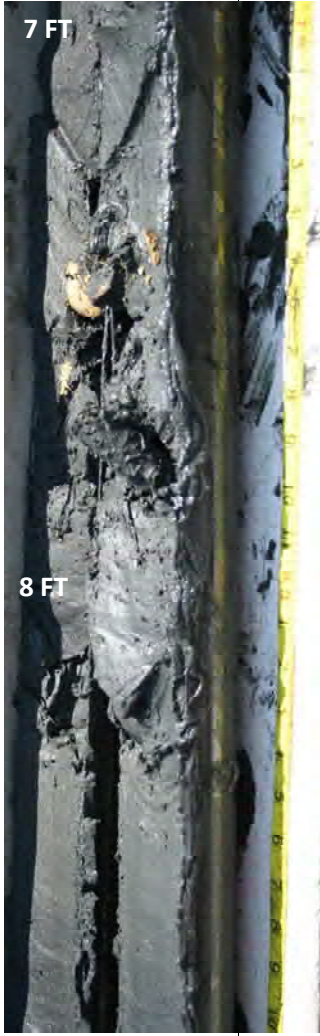



Core ID: NHH-H			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955073	Time: 15:35
Subcontractor:	Ocean Surveys Inc.	Y: 656256.7	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -36.2
Photo:			Notes:
		<p>0-1.6' - Black soft silt.. ML</p> <p>1.6-1.7' - Lense of dark grey clay. CL</p> <p>1.7-2.7' - Dark black silt with some sand. ML</p> <p>2.7-4.1' - Dark black silt with some sand. ML</p> <p>4.1-5.7' - Soft grey silt. ML</p> <p>5.3-5.6' - Oyster shells</p> <p>5.7-6.7' - Compact brown silt with some sand. ML</p> <p>6.7-7.0' - Transition between brown silt and grey clay. ML/CL</p>	
Comments: Samples collected at 0-5.4' (chemistry / GS [dup]) and 5.4-7.7' (chemistry/ GS)			

Core ID: NHH-H			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955073	Time: 15:35
Subcontractor:	Ocean Surveys Inc.	Y: 656256.7	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -36.2
Photo:			Notes:
		<p>7.0-7.8' - Dark grey clay streaked with light brown silt. ML/CL</p> <p>7.8-8.2' - Brown silt with fine sand. ML</p> <p>8.2-9.3 Reddish fine to medium sand. SW</p>	
Comments:			


Core ID: NHH-I			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955525.41	Time: 17:33
Subcontractor:	Ocean Surveys Inc.	Y: 656249.42	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 18
Weather:	Sunny, 79°F		Recovery (ft): 17.5
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-21.3
Photo:		Notes:	
		<p>0-0.7' - Grey soft silt with some sand. ML</p> <p>0.7-6.0' - Dark grey silty clay. CL</p>	
			
Comments: Samples collected at 0-0.7' (chemistry / GS) and 0.7-2.5' (chemistry/ GS)			

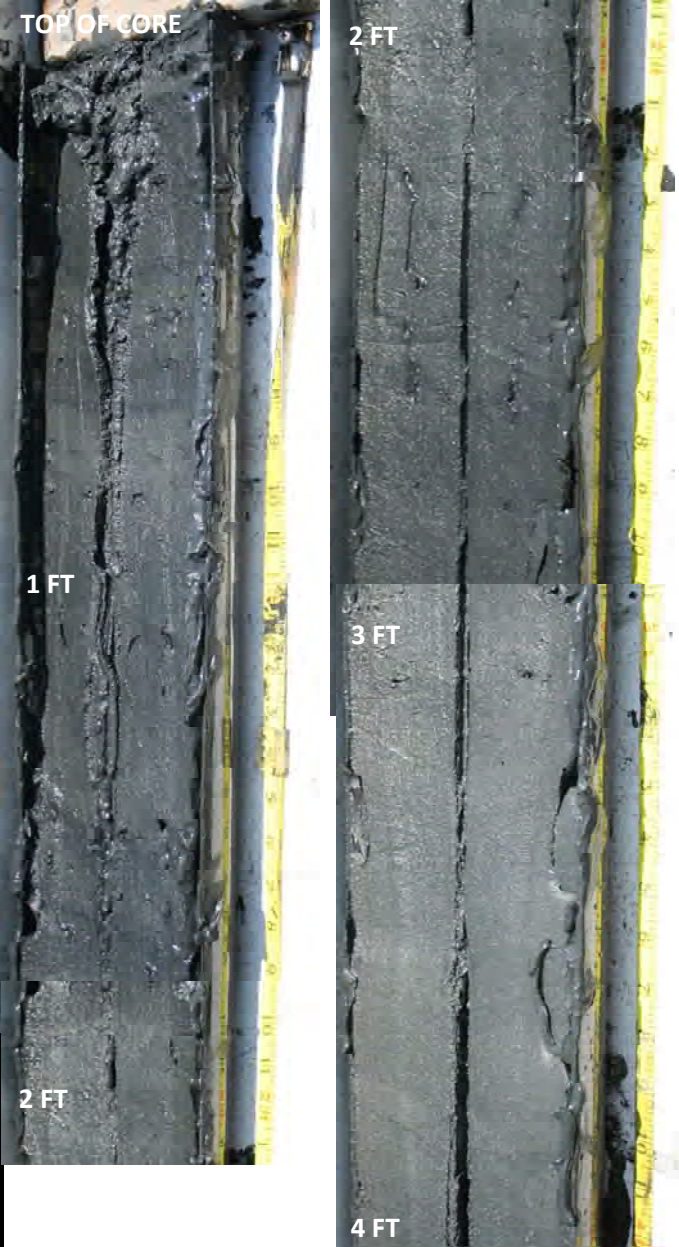
Core ID: NHH-I			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955525.41	Time: 17:33
Subcontractor:	Ocean Surveys Inc.	Y: 656249.42	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 18
Weather:	Sunny, 79°F		Recovery (ft): 17.5
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-21.3
Photo:		Notes:	
			
			
			
		<p>6.0-12.5' - Dark grey silty clay. CL</p>	
Comments:			





Core ID: NHH-J			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955130.54	Time: 11:09
Subcontractor:	Ocean Surveys Inc.	Y: 662186.32	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): 21.3
Photo:		Notes:	
   		 <p>0-4.7' - Dark grey to black soft silt with some sand. Very soft, wet. ML</p> <p>Not plastic.</p>	
Comments: Samples collected at 0-5.4' (chemistry / GS)			



Core ID: NHH-J			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955130.54	Time: 11:09
Subcontractor:	Ocean Surveys Inc.	Y: 662186.32	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): 21.3
Photo:			Notes:
    			<p>4.7-9.7' - Dark grey to black soft silt with some sand. ML</p> <p>Low plasticity.</p> <p>7.4' - Chunk of wood</p>
Comments:			




Core ID: NHH-K			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955275.32	Time: 13:58
Subcontractor:	Ocean Surveys Inc.	Y: 662195.02	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.1
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-35.8
Photo:		Notes:	
		<p>0-4.8' - Black soft silt. ML</p> <p>4.8-5.8' - Grey clay intertwined with reddish brown silt. CL/ML</p>	
Comments: Samples collected at 0-5.5' (chemistry / GS) and 5.5-8.2' (GS only)			

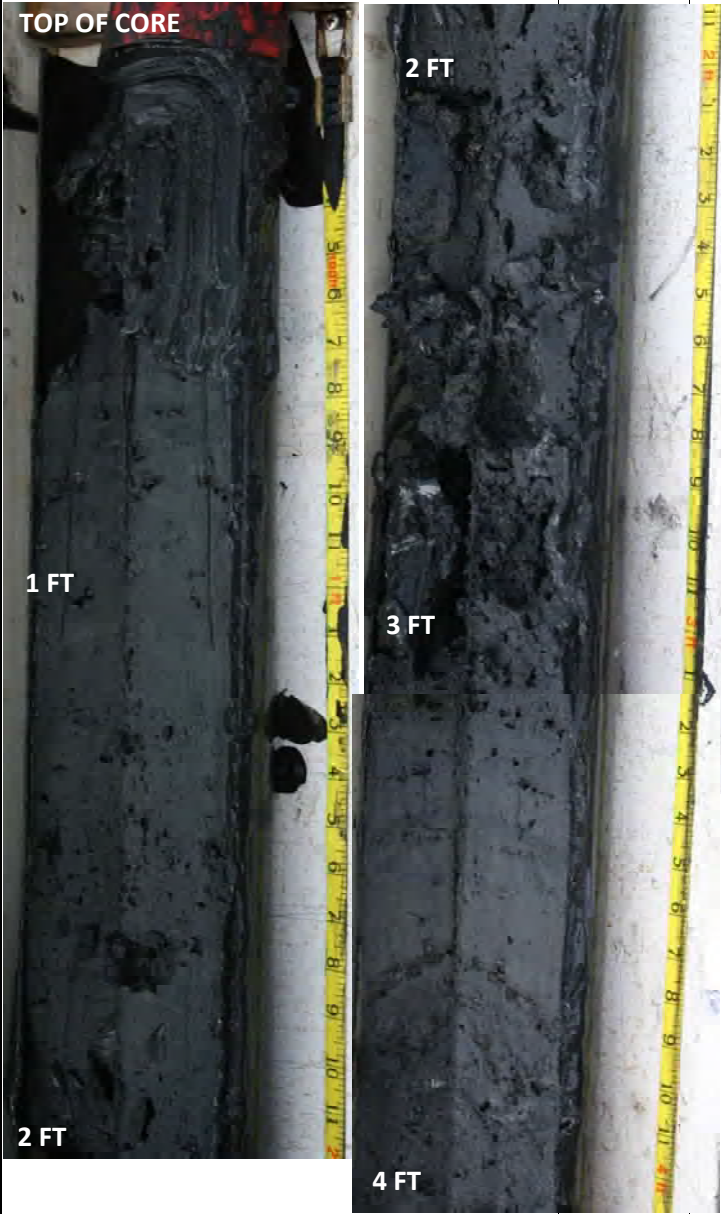

Core ID: NHH-K			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955275.32	Time: 13:58
Subcontractor:	Ocean Surveys Inc.	Y: 662195.02	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.1
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.8
Photo:			Notes:
		<p>5.8-6.1' - Reddish brown fine to medium sand. SW</p> <p>6.1-7.3' - Reddish brown medium to coarse sand. SW</p> <p>7.3-8.3' - Reddish brown fine to medium sand. SW</p> <p>8.3-9.1' - Reddish brown fine sand. SP</p>	
Comments:			

Core ID: NHH-L			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955734.84	Time: 12:50
Subcontractor:	Ocean Surveys Inc.	Y: 662225.81	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-21.7
Photo:		Notes:	
		<p>0-4.8' - Black soft silt with some fine to medium sand. ML</p>	
Comments: Samples collected at 0-6.7' (chemistry / GS)			

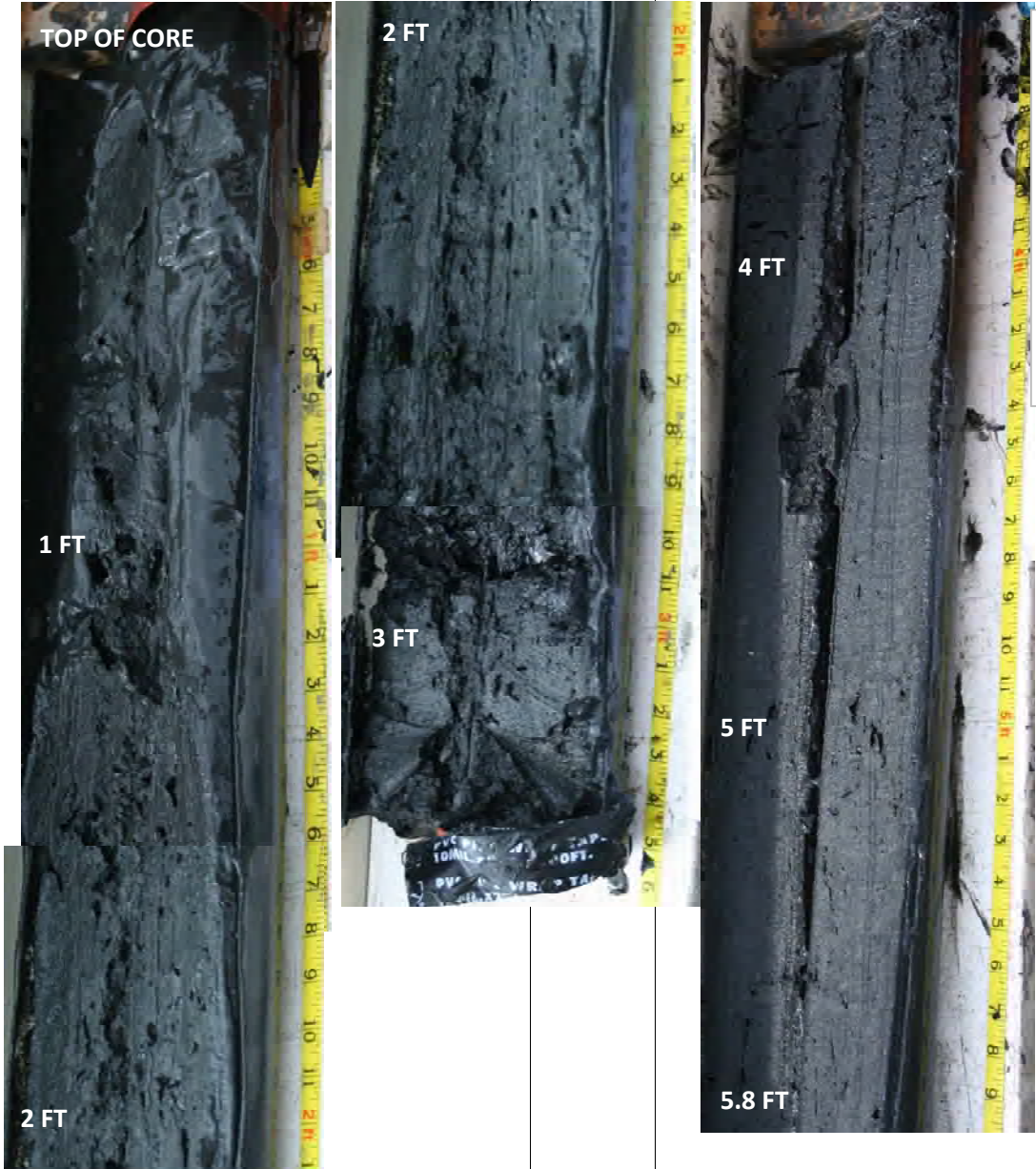
Core ID: NHH-L			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 955734.84	Time: 12:50
Subcontractor:	Ocean Surveys Inc.	Y: 662225.81	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-21.7
Photo:		Notes:	
			
			
		<p>4.8-7.8' - Black soft silt with some fine to medium sand. ML</p> <p>7.8-9.8' - Dark grey clay. CL</p>	
Comments:			

Core ID: NHH-M			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955479.97	Time: 15:56
Subcontractor:	Ocean Surveys Inc.	Y: 665130.38	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -30.4
Photo:		Notes:	
		 <div data-bbox="1154 499 1438 917"> <p>0.0-4.8' - Dark black silt. Very soft, wet, not plastic. ML</p> <p>Not plastic.</p> </div>	
Comments: Samples collected at 0-6.8' (chemistry / GS)			

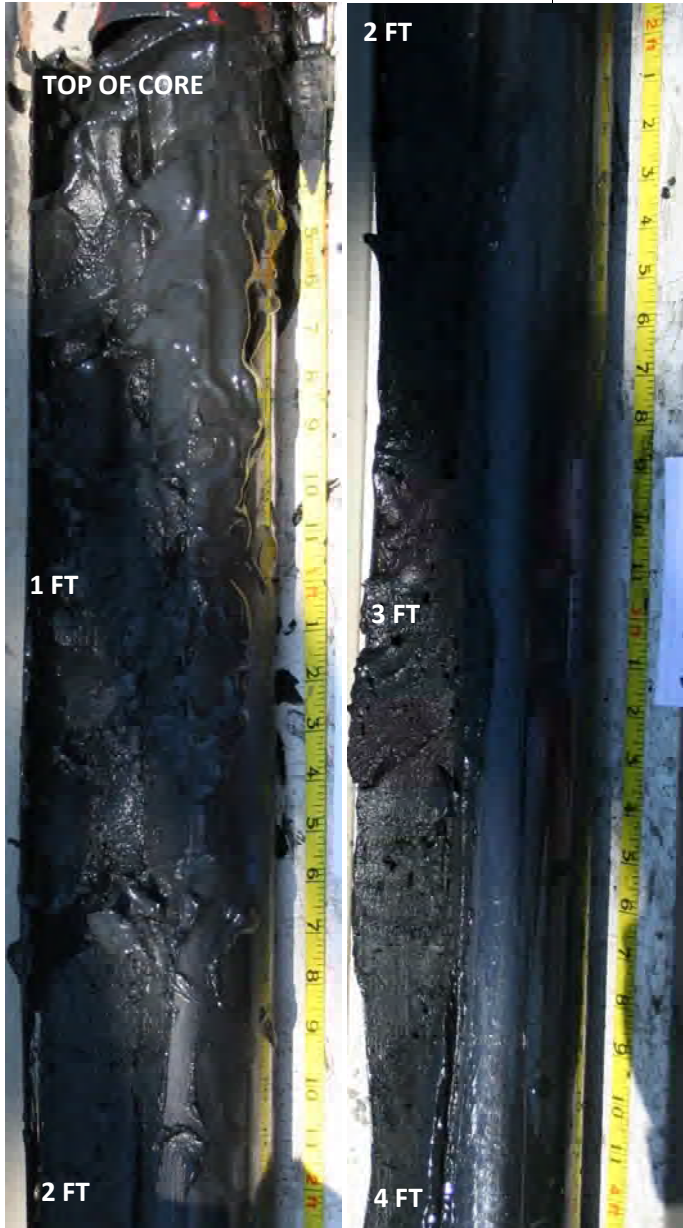

Core ID: NHH-M			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955479.97	Time: 15:56
Subcontractor:	Ocean Surveys Inc.	Y: 665130.38	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-30.4
Photo:		Notes:	
			
		<p>4.8-8.8' - Dark black silt. Very soft/ wet. Not plastic. ML</p> <p>8.8-9.7' - Reddish fine to medium sand. SW Low plasticity</p>	
Comments:			

Core ID: NHH-N			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955867.55	Time: 12:55
Subcontractor:	Ocean Surveys Inc.	Y: 665076.75	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -36.5
Photo:		Notes:	
		 <p>0.0-4.3' - Dark black silt. ML</p>	
Comments: Samples collected at 0-6.0' (chemistry / GS) and 6.0-7.5' (GS only)			




Core ID: NHH-N			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955867.55	Time: 12:55
Subcontractor:	Ocean Surveys Inc.	Y: 665076.75	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.3
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-36.5
Photo:		Notes:	
		<p>4.3-5.5' - Dark black silt. ML</p> <p>5.5-6.0' - Black soft silt with shell hash. Medium to coarse sand at transition zone, with slight petroleum-like odor. ML</p> <p>6.0-9.3' - Tan/reddish fine/medium sand. Sand color transitions from darker to lighter deeper in the core. SW</p>	
Comments:			

Core ID: NHH-O			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 956251.13	Time: 14:30
Subcontractor:	Ocean Surveys Inc.	Y: 665020.32	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 13
Weather:	Partly Sunny, 72°F		Recovery (ft): 13.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -33.1
Photo:		Notes:	
		<p>0.0-5.8' - Dark black silt. ML</p>	
Comments: Samples collected at 0-8.3' (chemistry / GS) and 8.7-10.9' (GS only)			


Core ID: NHH-O			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 956251.13	Time: 14:30
Subcontractor:	Ocean Surveys Inc.	Y: 665020.32	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 13
Weather:	Partly Sunny, 72°F		Recovery (ft): 13.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -33.1
Photo:		Notes:	
		<p>5.8-8.3' - Dark black silt. ML</p> <p>8.3-8.7' - Dark (black) coarse sand and gravel. SP</p> <p>8.7-13.0' - Reddish brown fine sand. SP</p> <p>13.0-13.3' - Transition zone reddish brown fine sand/ reddish brown clay. SP/CL</p> <p>13.3 - 13.4' - Reddish brown clay. CL</p>	
Comments:			

Core ID: NHH-P			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955176.17	Time: 12:00
Subcontractor:	Ocean Surveys Inc.	Y: 667304.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -16
Photo:		Notes:	
			
<p>TOP OF CORE</p> <p>1 FT</p> <p>2 FT</p> <p>2 FT</p> <p>3 FT</p> <p>4 FT</p>		<p>4 FT</p> <p>5 FT</p> <p>5.8 FT</p> <p>0.0-5.8' - Black silt, very soft to soft. Wet, not plastic. ML</p>	
Comments: Samples collected at 0-5.8' (chemistry / GS) and 5.8-12.3' (chemistry/ GS)			

Core ID: NHH-P			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955176.17	Time: 12:00
Subcontractor:	Ocean Surveys Inc.	Y: 667304.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -16
Photo:		Notes:	
			
		<p>5.8-8.9' - Black silt, very soft to soft. Wet, not plastic. ML</p> <p>8.9-9.0' - Band of brown/ tan fine/ medium sand. SW</p> <p>9.0-9.5' - Black silt. ML</p> <p>9.5-9.6' - Band of brown/ tan fine/ medium sand. SW</p> <p>9.6-12.3' - Black silt w/ shell hash at transition. ML</p> <p>12.3-13.2' - Tan/ brown fine/ medium sand with some grey silt. SM/SW</p>	
Comments:			

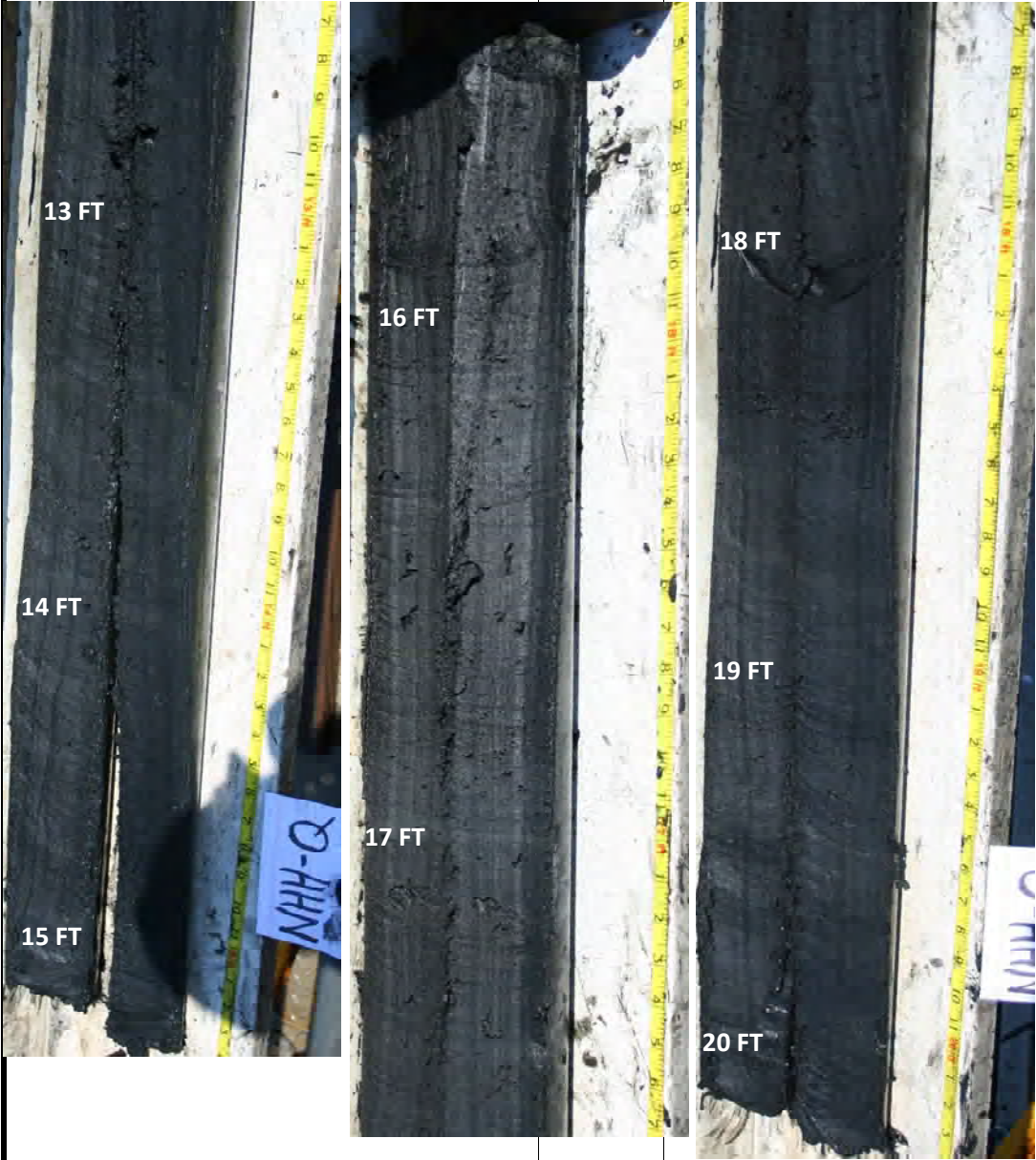
Core ID: NHH-P				
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017	
Client:	USACE	X: 955176.17	Time: 12:00	
Subcontractor:	Ocean Surveys Inc.	Y: 667304.47	Core Diameter (in): 3.5	
Sampling Personnel:	(AECOM)		No. of Attempts: 1	
Logged by:	Steve Howe		Penetration (ft): 30	
Weather:	Sunny, 75°F		Recovery (ft): 29.3	
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -16	
Photo:			Notes:	
				<p>13.2-15.2' - Brown medium sand. SP</p> <p>15.2-15.8' - Brownish to grey silty fine sand. SM</p> <p>15.8-18.3' - Brown silty fine sand with dark grey band at transition. Dense, moist. SM</p> <p>18.3-19.5' - Reddish brown silt, trace very fine sand and clay. Medium stiffness, moist, low plasticity. ML</p>
Comments:				


Core ID: NHH-P			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955176.17	Time: 12:00
Subcontractor:	Ocean Surveys Inc.	Y: 667304.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -16
Photo:			Notes:
		<p>19.5-21.9' - Reddish clayey silt ML/CL</p> <p>21.9-22.1' - Tan to brown fine sand. SP</p> <p>22.1-22.3 - Tannish brown clayey silt. ML/CL</p> <p>22.3-22.7' - Tannish brown fine to medium sand. SW</p> <p>22.7-23.8' - Tannish brown medium to coarse sand. SW</p> <p>23.8-23.9' - Dark grey band in medium to coarse sand. SW</p> <p>23.9-24.3' - Tannish brown medium to coarse sand. SW</p>	
Comments:			

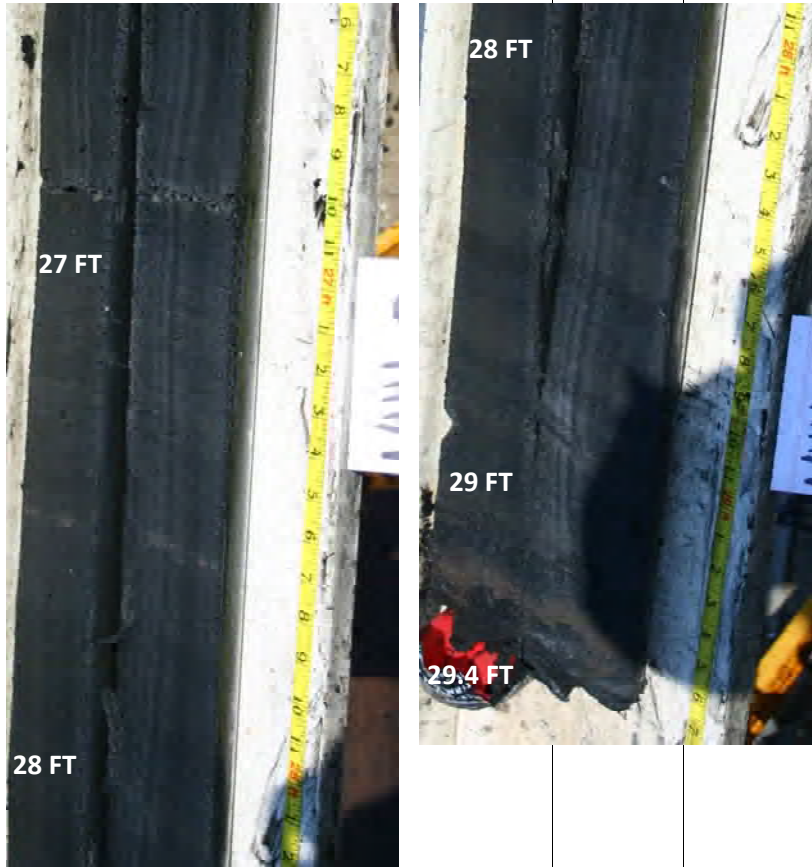
Core ID: NHH-P			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955176.17	Time: 12:00
Subcontractor:	Ocean Surveys Inc.	Y: 667304.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.3
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -16
Photo:			Notes:
		<p>24.3-25.4' - Tannish brown medium to coarse sand. SW</p> <p>25.4-26.1' - Tannish brown silty fine sand. SM</p> <p>26.1-27.1' - Brownish coarse sand with some silt and gravel. SM</p> <p>27.1-27.8' - Brownish medium to coarse sand. SW</p> <p>27.8-28.3' - Brownish red fine sand with clay. CL</p> <p>28.3-29.3' - Brownish coarse sand with silt and gravel. SM</p>	
Comments:			

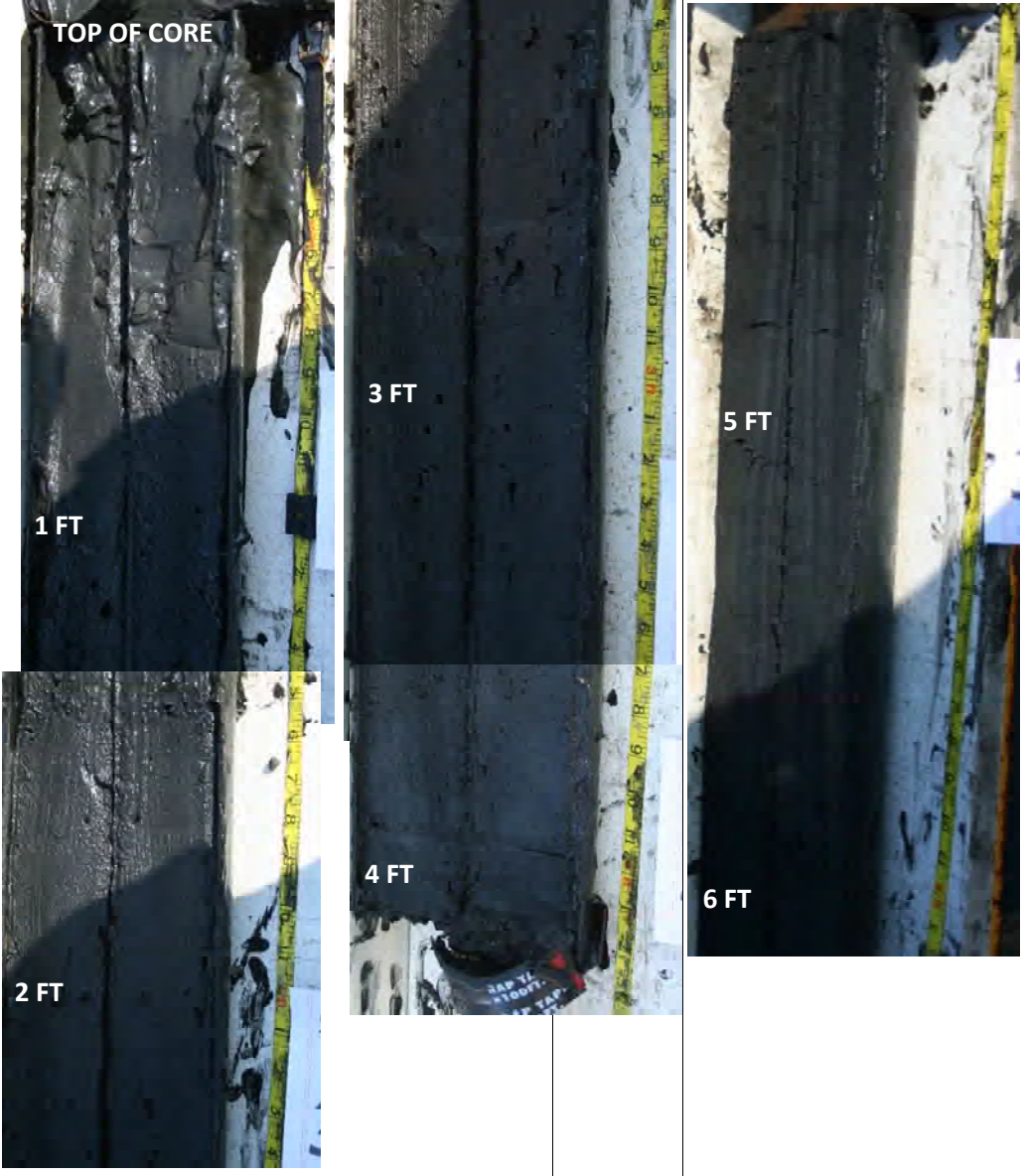
Core ID: NHH-Q			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955500.09	Time: 14:04
Subcontractor:	Ocean Surveys Inc.	Y: 667254.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -12.2
Photo:		Notes:	
		<p>0.0-5.2' - Black fine silt. Moist to 2.0'. ML</p>	
Comments: Samples collected at 0-5.3' (chemistry / GS) and 5.3-29.4' (chemistry/ GS)			


Core ID: NHH-Q			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955500.09	Time: 14:04
Subcontractor:	Ocean Surveys Inc.	Y: 667254.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -12.2
Photo:		Notes:	
		<p>5.2-12.5' - Black silt. ML</p>	
Comments:			

Core ID: NHH-Q			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955500.09	Time: 14:04
Subcontractor:	Ocean Surveys Inc.	Y: 667254.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -12.2
Photo:		Notes:	
		<p>12.5-20.3' - Black silt. ML</p>	
Comments:			






Core ID: NHH-Q			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955500.09	Time: 14:04
Subcontractor:	Ocean Surveys Inc.	Y: 667254.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -12.2
Photo:		Notes:	
			
		<p>20.3-26.2' - Black silt. ML</p> <p>26.2-Grey fine to medium sand. SW</p> <p>26.2-26.8' - Black fine silt. SP</p>	
Comments:			

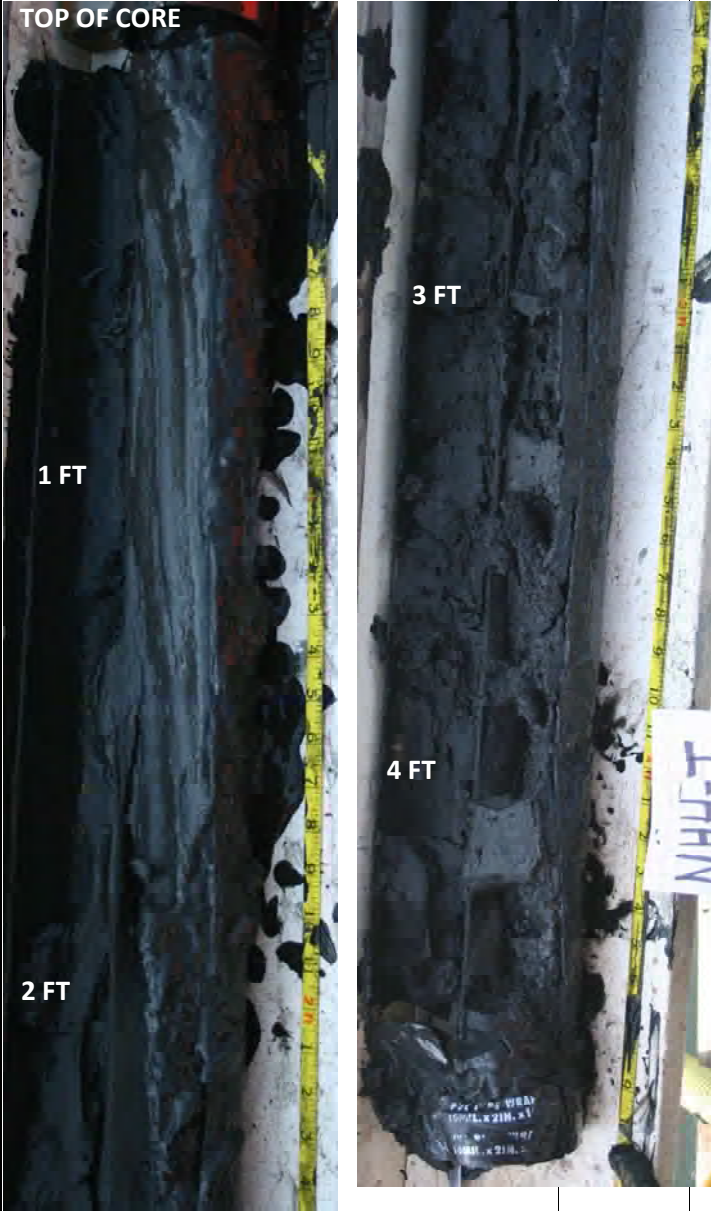
Core ID: NHH-Q			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955500.09	Time: 14:04
Subcontractor:	Ocean Surveys Inc.	Y: 667254.47	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -12.2
Photo:			Notes:
		<p>26.8' - Sand seam Grey fine to medium sand. SW</p> <p>26.8-27.6' - Black silt. ML</p> <p>27.6' - Sand seam Grey fine to medium sand. SW</p> <p>27.6-29.3' - Black silt. ML</p> <p>29.3-29.4' - Brownish black silt. ML</p>	
Comments:			



Core ID: NHH-R			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 956066.76	Time: 8:10
Subcontractor:	Ocean Surveys Inc.	Y: 667161.69	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 9.5
Weather:	Sunny, 79°F		Recovery (ft): 9.2
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -36.3
Photo:		Notes:	
		<p>0.0-6.0' - Black soft silt with some clay. ML/CL</p>	
Comments: Samples collected at 0-4.2' (chemistry / GS) and 4.2-7.7' (chemistry/ GS)			




Core ID: NHH-R			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 956066.76	Time: 8:10
Subcontractor:	Ocean Surveys Inc.	Y: 667161.69	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 9.5
Weather:	Sunny, 79°F		Recovery (ft): 9.2
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -36.3
Photo:		Notes:	
		<p>6.0-9.2' - Black soft silt with some clay. ML/CL</p>	
Comments:			


Core ID: NHH-S			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 956558.51	Time: 9:39
Subcontractor:	Ocean Surveys Inc.	Y: 667100.36	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -37.6
Photo:		Notes:	
		<p>0.0-4.5' - Black soft silt with some fine to coarse sand. Very soft, wet. ML</p> <p>Not plastic.</p>	
Comments: Samples collected at 0-6.0' (chemistry / GS) and 6.0-6.4' (chemistry/ GS)			


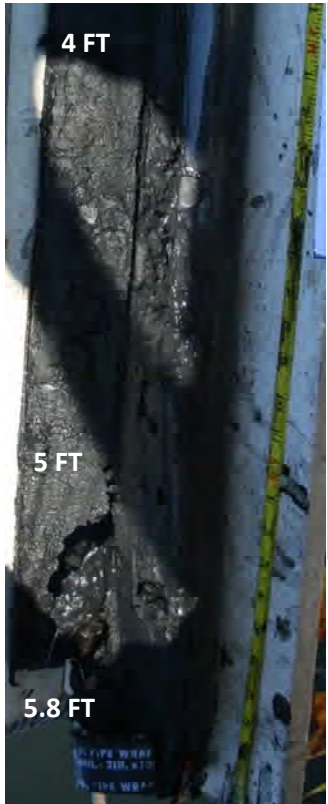
Core ID: NHH-S			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/10/2017
Client:	USACE	X: 956558.51	Time: 9:39
Subcontractor:	Ocean Surveys Inc.	Y: 667100.36	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 79°F		Recovery (ft): 9.5
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -37.6
Photo:			Notes:
			
			<p>4.5-6.0' - Black soft silt with some fine to coarse sand. Soft, wet. ML</p> <p>Not plastic</p> <p>6.0-9.5' - Reddish fine sand. Very hard, moist. SP</p>
Comments:			




Core ID: NHH-T			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955476.02	Time: 17:19
Subcontractor:	Ocean Surveys Inc.	Y: 667998.66	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Partly Sunny, 72°F		Recovery (ft): 19.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -8.7
Photo:		Notes:	
		<p>0.0-4.8' - Black silt. Very soft, wet. ML</p> <p>Not plastic.</p>	
Comments: Samples collected at 0-4.8' (chemistry / GS) and 4.8-16.3' (chemistry/ GS)			



Core ID: NHH-T			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955476.02	Time: 17:19
Subcontractor:	Ocean Surveys Inc.	Y: 667998.66	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Partly Sunny, 72°F		Recovery (ft): 19.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -8.7
Photo:			Notes:
			 <div data-bbox="1279 506 1421 856"> <p>4.8-9.8' - Black silt. Very soft to soft. Wet to moist. ML</p> <p>Not plastic to low plasticity.</p> </div>
Comments:			

Core ID: NHH-T			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955476.02	Time: 17:19
Subcontractor:	Ocean Surveys Inc.	Y: 667998.66	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Partly Sunny, 72°F		Recovery (ft): 19.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -8.7
Photo:		Notes:	
			
			<p>9.0-13.8' - Black silt. Very soft to soft. Wet to moist. ML</p> <p>Not plastic to low plasticity.</p>
Comments:			

Core ID: NHH-T			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 955476.02	Time: 17:19
Subcontractor:	Ocean Surveys Inc.	Y: 667998.66	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 20
Weather:	Partly Sunny, 72°F		Recovery (ft): 19.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -8.7
Photo:		Notes:	
			
			<p>15.0-19.7' - Black silt. Very soft to soft. Wet to moist. ML</p> <p>Not plastic to low plasticity.</p>
Comments: Photo for horizon 13.8-15.0 did not save.			

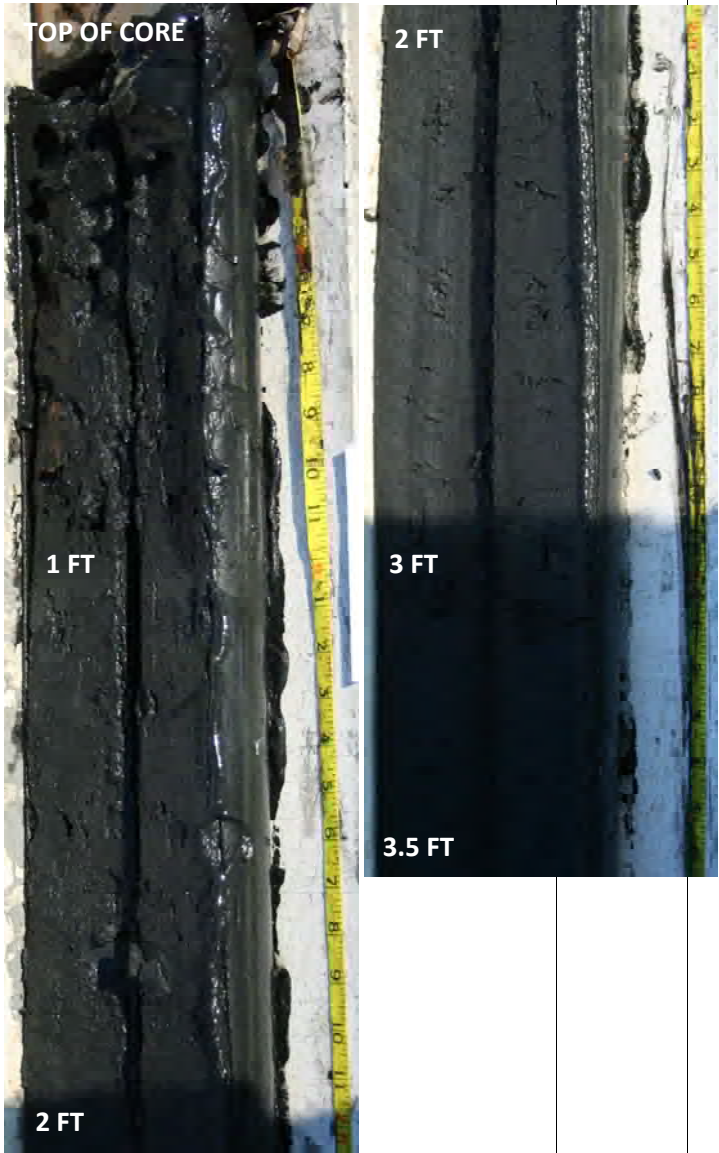
Core ID: NHH-U			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 8:37
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.9
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:		Notes:	
			
		0.0-5.8' - Black silt. Moist to 1.5'. ML	
Comments: Samples collected at 0-5.8' (chemistry / GS) and 5.8-30.0' (chemistry/ GS)			

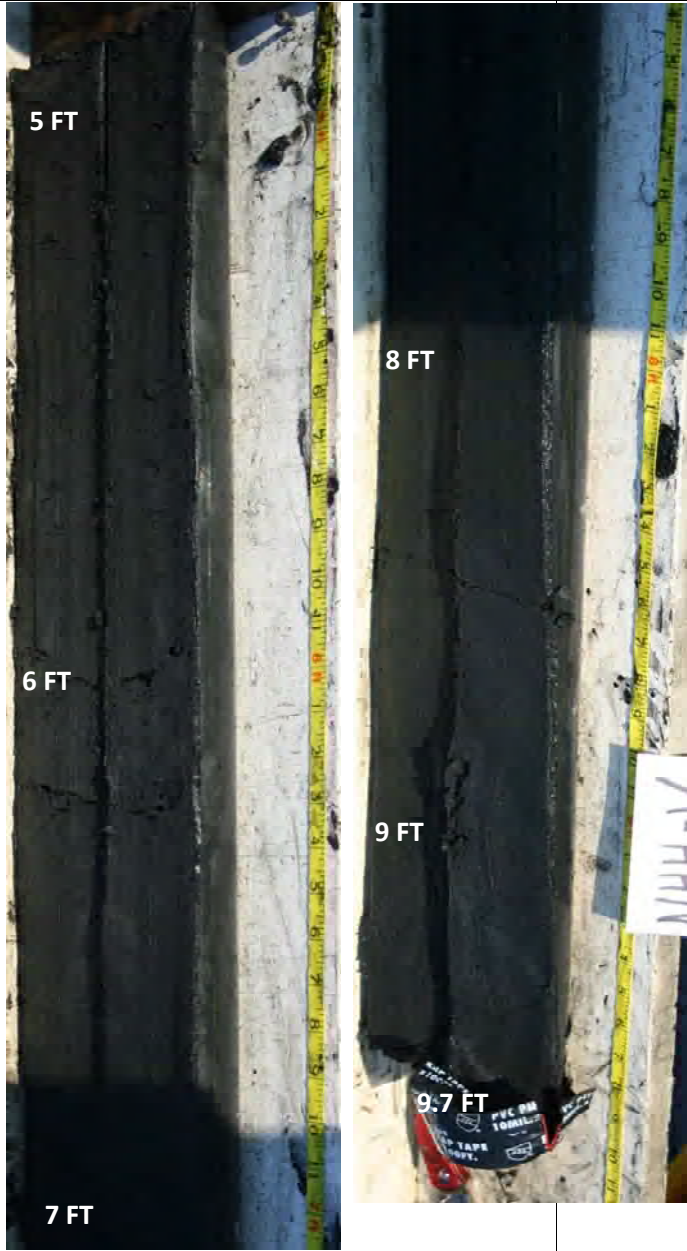
Core ID: NHH-U			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 8:37
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.9
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:		Notes:	
			
			
		<p>5.8-13.0' - Black silt. ML</p>	
Comments:			

Core ID: NHH-U			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 8:37
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.9
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:		Notes:	
			
		13.0-18.0' - Black silt. ML	
Comments:			



Core ID: NHH-U			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 8:37
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.9
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:		Notes:	
		18.0-24.9' - Black silt. ML	
Comments: Photo for horizon 20.0-21.0' did not save.			




Core ID: NHH-U			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 8:37
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 30
Weather:	Sunny, 75°F		Recovery (ft): 29.9
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:			Notes:
		<div style="border: 1px solid black; padding: 5px; min-height: 200px;"> 24.9-29.9' - Black silt. ML </div>	
Comments:			




Core ID: NHH-V			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 17:25
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 75°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -11.8
Photo:		Notes:	
		<p>0.0-3.5' - Black silt. Moist to 0.8'. ML</p>	
Comments: Photo for horizon 4.0-5.0' did not save. Samples collected at 0-4.8' (chemistry / GS) and 4.8-8.6' (chemistry/ GS)			

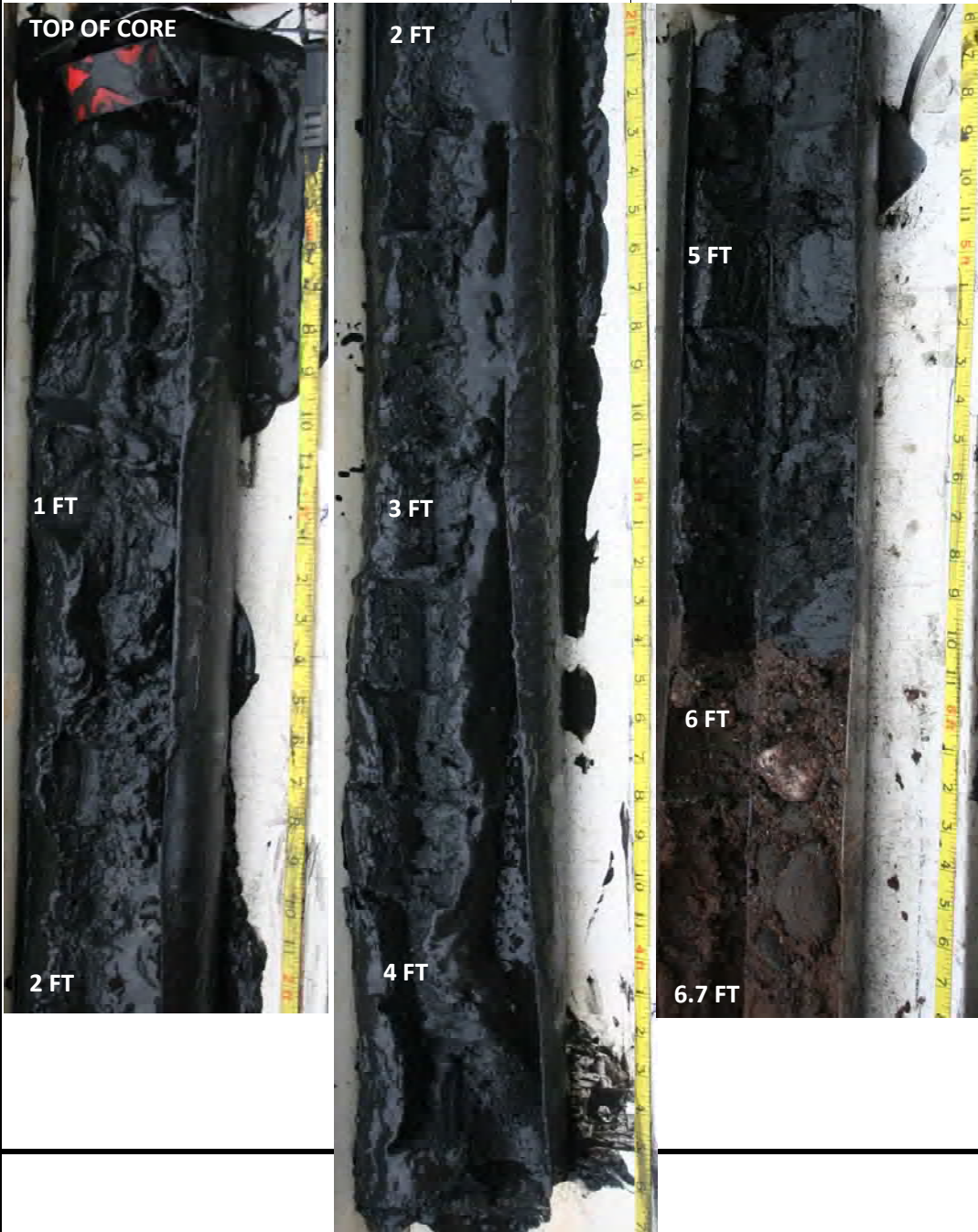
Core ID: NHH-V			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 955696.43	Time: 17:25
Subcontractor:	Ocean Surveys Inc.	Y: 667963.55	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 75°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-11.8
Photo:		Notes:	
		<div style="border: 1px solid black; padding: 10px; min-height: 200px;"> 5.0-9.7' - Black silt. ML </div>	
Comments:			

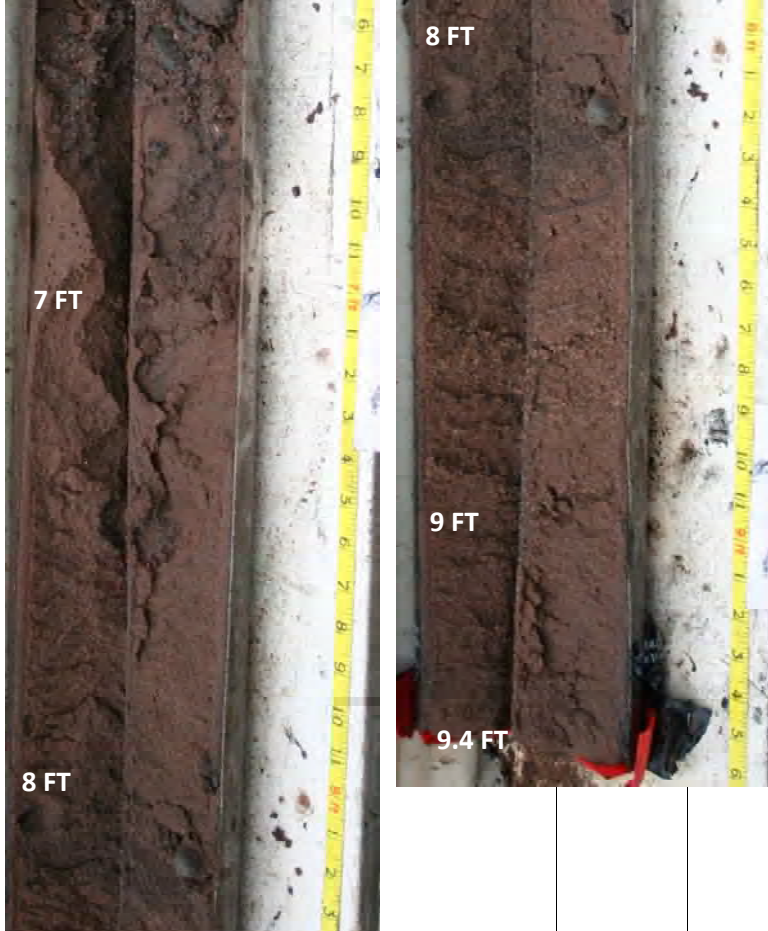
Core ID: NHH-W			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 956642.29	Time: 16:12
Subcontractor:	Ocean Surveys Inc.	Y: 667836.21	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 75°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore	Water Depth (ft, MLLW):	-35.5
Photo:		Notes:	
		<p>0.0-4.8' - Black silt. Very soft, wet. ML</p> <p>Not plastic</p>	
Comments: Samples collected at 0-5.5' (chemistry / GS) and 5.5-8.2' (GS only)			


Core ID: NHH-W			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/9/2017
Client:	USACE	X: 956642.29	Time: 16:12
Subcontractor:	Ocean Surveys Inc.	Y: 667836.21	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Sunny, 75°F		Recovery (ft): 9.8
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.5
Photo:		Notes:	
			
		<p>4.8-5.5' - Black silt. ML</p> <p>5.5-6.8' - Reddish fine sand with some silt. Very hars, moist. Poorly graded. SM</p> <p>6.8-8.2' - Reddish fine sand. Very hard, moist, poorly graded. SP</p> <p>8.2-9.3' - Reddish clayey silt. ML/CL</p> <p>9.3-9.8' - Reddish fine sand. SP</p>	
Comments:			


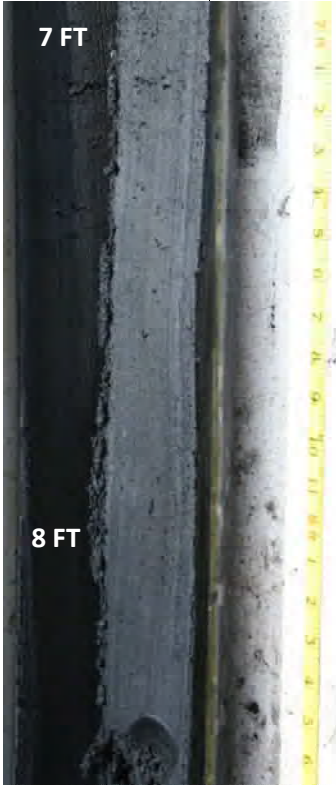
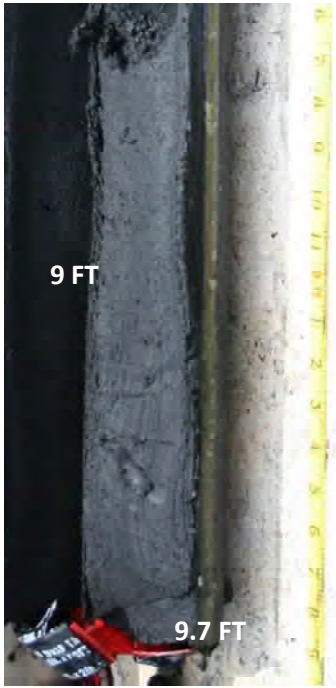
Core ID: NHH-X			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 956695.36	Time: 8:43
Subcontractor:	Ocean Surveys Inc.	Y: 669144.51	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -19
Photo:		Notes:	
			
			<p>0.0-4.7' - Black silt. Very soft. Wet, not plastic. Faint petroleum-like odor. ML</p>
Comments: Samples collected at 0-5.2' (chemistry / GS [dup]) and 5.2-8.0' (chemistry/ GS)			

Core ID: NHH-X			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 956695.36	Time: 8:43
Subcontractor:	Ocean Surveys Inc.	Y: 669144.51	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -19
Photo:			Notes:
			
			<p>4.7-5.2' - Black silt. ML</p> <p>5.2-8.0' - Dark tan/ brown fine sand. Very hard/ moist. SP</p> <p>8.0-9.7' - Tannish brown coarse sand. SP</p>
Comments:			

Core ID: NHH-Y			
Project: New Haven Harbor FNP	Coordinates (CT ft)		Date: 8/8/2017
Client: USACE	X: 956935.61	Time: 10:34	
Subcontractor: Ocean Surveys Inc.	Y: 668934.77	Core Diameter (in):	3.5
Sampling Personnel: (AECOM)	No. of Attempts:		1
Logged by: Steve Howe	Penetration (ft):		10
Weather: Partly Sunny, 72°F	Recovery (ft):		9.4
Sampling Equipment: Vibracore	Water Depth (ft, MLLW):		-35.5
Photo:		Notes:	
		<p>0.0-5.9' - Black silt. ML</p> <p>5.9-6.7' - Reddish brown coarse sand with cobbles. SP</p>	
Comments: Samples collected at 0-5.9' (chemistry / GS) and 5.9-8.5' (GS only)			

Core ID: NHH-Y			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 956935.61	Time: 10:34
Subcontractor:	Ocean Surveys Inc.	Y: 668934.77	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.4
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.5
Photo:			Notes:
		<p>6.7-6.8' - Reddish brown coarse sand. SP</p> <p>6.8-9.5' - Reddish fine to medium sand with occasional cobbles. SW</p>	
Comments:			

Core ID: NHH-Z			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 957127.56	Time: 11:43
Subcontractor:	Ocean Surveys Inc.	Y: 668767.57	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.3
Photo:		Notes:	
		0.0-4.8' - Black silt. ML	
Comments: Samples collected at 0-5.0' (chemistry / GS) and 5.0-8.7' (chemistry/ GS)			

Core ID: NHH-Z			
Project:	New Haven Harbor FNP	Coordinates (CT ft)	Date: 8/8/2017
Client:	USACE	X: 957127.56	Time: 11:43
Subcontractor:	Ocean Surveys Inc.	Y: 668767.57	Core Diameter (in): 3.5
Sampling Personnel:	(AECOM)		No. of Attempts: 1
Logged by:	Steve Howe		Penetration (ft): 10
Weather:	Partly Sunny, 72°F		Recovery (ft): 9.7
Sampling Equipment:	Vibracore		Water Depth (ft, MLLW): -35.3
Photo:		Notes:	
			
			
		<p>4.8-5.3' - Black silt. ML</p> <p>5.3-5.5' - Reddish brown fine to medium sand. SW</p> <p>5.5-7.6' - Firm/compact black silt. ML</p> <p>7.6-9.8' - Firm/compact black silt. Trace medium to fine sand. ML</p>	
Comments:			

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Client: <u>USACE</u>	Contractor: <u>OSI</u>	Water Depth:
Project Number: <u>100543021</u>	Sampling Equipment: <u>vibracore</u>	MLW: <u>2.85 Ip MLW</u>
Station Location: <u>NHH-C</u>	Survey Vessel: <u>Corda</u>	Core Diameter (in): <u>3.5</u>
GPS Coordinates: <u>E 956256.40 N 642185.04</u>	Weather: <u>Sunny 70-80°</u>	No. Attempts: <u>1</u>
Date: <u>8/30/17 (collected 8/17/17)</u>	Seas: <u>Calm</u>	Logged by: <u>H. Jones</u>
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

[illegible]

% Recovery:

Comments:

Client: USACE	Contractor: OSI	Water Depth:
Project Number: 60543021	Sampling Equipment: Vibracore	MLW: 4.02 ft, MLLW
Station Location: NHH-F	Survey Vessel: Candor	Core Diameter (in): 3.5
GPS Coordinates: E954916.7 N651081.9	Weather: sunny 70-80°F	No. Attempts: 1
Date: 8/30/17 (collected 8/16/17)	Seas: calm	Logged by: H. Jones
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

[illegible]

Estimated Penetration Range:	Comments:
Project Depth:	
Actual Penetration:	
Recovery:	
% Recovery:	

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Client: <u>USACE</u>	Contractor: <u>OSI</u>	Water Depth:
Project Number: <u>60543021</u>	Sampling Equipment: <u>vibracore</u>	MLW: <u>0.76 ft MLLW</u>
Station Location: <u>NHH-J</u>	Survey Vessel: <u>Candor</u>	Core Diameter (in): <u>3.5</u>
GPS Coordinates: <u>E955160.4 N462188.0</u>	Weather: <u>Swing 70-80°F</u>	No. Attempts: <u>1</u>
Date: <u>8/30/17 (collected 8/14/17)</u>	Seas: <u>Calm</u>	Logged by: <u>H. Jones</u>
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

[illegible]**Estimated Penetration Range:****Project Depth:**

Actual Penetration:

Recovery:

% Recovery:

Comments:

Water Depth:

MLW: 1.47 ft. MLLW

Core Diameter (in): 3.5

No. Attempts:

Logged by: H. Jones

Survey Personnel:

(Note: bgs = below ground surface)

44

% Recovery:

AECOM250 Apollo Drive, Chelmsford, MA 01824
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Client: <u>USACE</u>	Contractor: <u>OSI</u>	Water Depth:
Project Number: <u>60543021</u>	Sampling Equipment: <u>vibracore</u>	MLW: <u>4.57 ft MLLW</u>
Station Location: <u>NHH-P</u>	Survey Vessel: <u>Candu</u>	Core Diameter (in): <u>3.5</u>
GPS Coordinates: <u>E955172.0 N667298.2</u>	Weather: <u>Sunny 70-80°F</u>	No. Attempts: <u>1</u>
Date: <u>8/30/17</u>	Seas: <u>Calm</u>	Logged by: <u>H. Jows</u>
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method: _____
						0-12.9' Black SILT, very soft to soft, wet not plastic OLEY 1 2.5/N
						10YR 2/2 - GLEY 1 2.5/N Brown / black mottling (mostly black) 5.7'-11.3'
						lens of silty f. sand (dk red-brown) 10.3'-10.4' (7.5YR 2.5/2)
						12.9'-16.1' Dk brown silty f. SAND grading to f-m SAND, very hard, moist 10YR 3/1
						16.1'-18.2' Dk brown silty f. SAND, dense, moist 10YR 3/1
						18.2'-20.4' Red-brown SILT, trace v.f. sand, + clay med stiff, moist 7.5YR 5/2 too plastic
						20.4'-21.7' Red-brown silty f. SAND, very hard, poorly graded, moist 5YR 5/2
						21.7'-27.6' Red-brown f-m SAND, med dense to loose, moist lens of brown silt @ 23.5' 5YR 5/1
						27.6'-30' Red-brown f-c SAND, some f-c gravel subrounded - rounded, loose, moist 5YR 4/2

Estimated Penetration Range:**Project Depth:****Actual Penetration:****Recovery:****% Recovery:****Comments:**

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Client: USACE	Contractor: OSI	Water Depth:
Project Number: 60543021	Sampling Equipment: vibracore	MLW: 1.08 ft. MLLW
Station Location: NHH-S	Survey Vessel: Candu	Core Diameter (in): 3.5
GPS Coordinates: E956561.0 N667097.4	Weather: Sunny 70-80°F	No. Attempts: 1
Date: 8/30/17 (collected 8/15/17)	Seas: Calm	Logged by: H. Jones
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

[illegible]

% Recovery:

Comments:

AECOM 250 Apollo Drive, Chelmsford, MA 01824 (978) 905-2100 - office, (978) 905-2101 - fax		Core ID: <u>T</u>				
		Page <u>1</u> of <u>1</u>				
Client: <u>USACE</u>		Contractor: <u>OSI</u>	Water Depth:			
Project Number: <u>60543021</u>		Sampling Equipment: <u>vibracore</u>	MLW: <u>1.06 ft, MLLW</u>			
Station Location: <u>NHH-T</u>		Survey Vessel: <u>Candu</u>	Core Diameter (in): <u>3.5</u>			
GPS Coordinates: <u>E955477.5 N667998.3</u>		Weather: <u>Sunny, 70-80°F</u>	No. Attempts: <u>1</u>			
Date: <u>8/30/17 (collected 8/12/17)</u>		Seas: <u>Calm</u>	Logged by: <u>H. Jones</u>			
Time:		Survey Personnel:				
(Note: bgs = below ground surface)						
Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method: _____
						0-4.1' Black SILT, very soft, wet, not plastic GLEY 1 2.5/N
						4.1'- 6.1 9' Mottled black + brown SILT, very soft to soft, wet to moist trace f. sand + clay + org. not plastic to 10' plan
						from Mottling decreases w/ depth - mostly black silt
						brown = 10YR 3/2 black = GLEY 1 2.5/N
Estimated Penetration Range:						Comments:
Project Depth:						
Actual Penetration:						
Recovery:						
% Recovery:						

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Page 1 of 1

Client: <i>USACE</i>	Contractor: <i>OSI</i>	Water Depth:
Project Number: <i>60543021</i>	Sampling Equipment: <i>vibracore</i>	MLW: <i>4.08 ft, MLLW</i>
Station Location: <i>N4H-W</i>	Survey Vessel: <i>Candor</i>	Core Diameter (in): <i>3.5</i>
GPS Coordinates: <i>E 954649.2 N 1667830.3</i>	Weather: <i>Sunny, 70-80°F</i>	No. Attempts: <i>1</i>
Date: <i>8/30/17 (collected 8/15/17)</i>	Seas: <i>Calm</i>	Logged by: <i>H. Jones</i>
Time:	Survey Personnel:	

(Note: bgs = below ground surface)

[illegible]

% Recovery:

Comments:

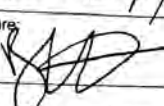
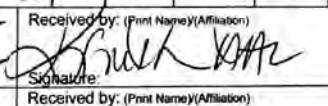
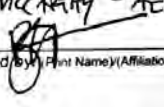
AECOM 250 Apollo Drive, Chelmsford, MA 01824 (978) 905-2100 - office, (978) 905-2101 - fax		Core ID: <u>X</u>				
		Page <u>1</u> of <u>1</u>				
Client: <u>USACE</u>		Contractor: <u>OSI</u>	Water Depth:			
Project Number: <u>60543021</u>		Sampling Equipment: <u>vibracore</u>	MLW: <u>5.60 ft, MLLW</u>			
Station Location: <u>NHH-X</u>		Survey Vessel: <u>Candu</u>	Core Diameter (in): <u>3.5</u>			
GPS Coordinates: <u>E 956694.8 N 669145.6</u>		Weather: <u>Sunny 70-80°F</u>	No. Attempts: <u>1</u>			
Date: <u>8/30/17</u>		Seas: <u>Calm</u>	Logged by: <u>H. Jones</u>			
Time:		Survey Personnel:				
(Note: bgs = below ground surface)						
Depth Range	Blow per 6 Inch	Recovery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method: _____
						0-6.4' Black SILT, very soft, wet Not plastic CLAY 2 2.5/5BG
						6.4'-9.4' Dk brown f. SAND, trace silt, very hard, moist 10YR 3/1
						Some shell frags 6.9'-7.2', 8'-8.5'
Estimated Penetration Range:						Comments:
Project Depth:						
Actual Penetration:						
Recovery:						
% Recovery:						

Attachment 4 New Haven Harbor 2017 Chain of Custody Forms

AECOM

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client/Project Name: USACE / NHH FWP		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4" 2 - H2SO4, 4" 3 - HNO3, 4" 4 - NaOH, 4" 5 - NaOH/ZnAc, 4" 7 - 4"			
Project Number: 60543021		Field Logbook No.:												Main Codes DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product			
Sampler (Print Name)/(Affiliation): RYAN MCLEATHY / AECOM		Chain of Custody Tape Nos.:																	
Signature: 		Send Results/Report to: MARY O'CONNELL KOZIK		TAT: G-S-241A CHEM - STD															
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	GRAV SIZE - SIEVE	HEAVY METALS - 6004 / 7004 / 7005	PCBS - 8080 / 8081 / 8082	REST. LIDES - 8081B	PAHs - 8070 D 5M	TOL - 9060	Lab I.D.	Remarks			
NHH-X-TOP	8/8/17	0902	X		8oz/16oz	SD	4°C	N/A	X	X	X	X	X	X		0-4'9"			
NHH-X-REB-TOP	8/8/17	0902	X			SD			X	X	X	X	X	X		REPUKIE - 0.49"			
NHH-X-BOTTOM	8/8/17	0922	X			SD			X	X	X	X	X	X		4'9"-8.0'			
NHH-Y-TOP	8/8/17	1037	X			SD			X	X	X	X	X	X		0-5'11"			
NHH-Y-BOTTOM	8/8/17	1037	X		8oz	SD			X							5'11"-8'6"			
NHH-Z-TOP	8/8/17	1153	X		8oz/16oz	SD			X	X	X	X	X	X		0-5.0'			
NHH-Z-BOTTOM	8/8/17	1153	X			SD			X	X	X	X	X	X		5.0'-8'8"			
NHH-N-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0'			
NHH-N-MS-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0' MS			
NHH-N-MSD-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0' MSD			
NHH-N-BOTTOM	8/8/17	1305	X		8oz	SD			X							6.0'-7'6"			
NHH-O-TOP	8/8/17	1445	X		8oz/16oz	SD			X	X	X	X	X	X		0-8' 2 1/4"			
NHH-O-BOTTOM	8/8/17	1445	X		8oz	SD			X							8'8"-10'9"			
Relinquished by: (Print Name)/(Affiliation) RYAN MCLEATHY - AECOM		Date: 8/8/17 Time: 1847		Received by: (Print Name)/(Affiliation) 		Date: 8/8/17 Time: 1847		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WEST BORDEN, MA											
Signature: 		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via: UPS FedEx Courier Other											
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Temp blank: Yes No											
Signature:		Date:		Received by: (Print Name)/(Affiliation)		Date:													



CHAIN OF CUSTODY RECORD

Page 2 of 2

Client/Project Name: USACE / NHH FNP		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass O - Other E - Encore		Preservation 1 - HCl, 4" 2 - H2SO4, 4" 3 - HNO3, 4" 4 - NaOH, 4" 5 - NaOH/ZnAc, 4" 6 - Na2S2O3, 4" 7 - 4"			
Project Number: 60543021		Field Logbook No.:																	
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM		Chain of Custody Tape Nos.:																	
Signature: 		Send Results/Report to: MARY STONNELL 60216		TAT: 6S-211T AECOM - STD															
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	G-PAW SRE - SIEVE	METALS - 6020A / 7474-747B	PCBS - 8082 / 8070 311	PESTICIDES - 8081 B	PAHS - 8270 DS11	TOL - 9060	Lab I.D.	Remarks			
NHH - M	8/8/17	1610	X		807/1602	SD	4CL	MA	X	X	X	X	X	X		0-6'9"			
NHH - T - TOP	8/8/17	1734	X		807/1607	SD	I	I	X	X	X	X	X	X		0-4'10"			
NHH - T - BOTTOM	8/8/17	1734	X		I	SD	I	I	X	X	X	X	X	X		4'10" - 16'4"			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/8/17 Time: 1847		Received by: (Print Name)/(Affiliation) 		Date: 8/8/17 Time: 1847		Analytical Laboratory (Destination): ALPHA ANALYTICAL 4TH FL. 420 PORTA 8 WALKER DRIVE WEST BOROUGH, MA											
Signature:		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via: UPS FedEx Courier Other											
Relinquished by: (Print Name)/(Affiliation)		Time:		Signature:		Time:		Temp blank: Yes No											
Signature:		Date:		Received by: (Print Name)/(Affiliation)		Date:													
Relinquished by: (Print Name)/(Affiliation)		Time:		Signature:		Time:													
Signature:		Date:		Received by: (Print Name)/(Affiliation)		Date:													
Relinquished by: (Print Name)/(Affiliation)		Time:		Signature:		Time:													
Signature:		Date:		Received by: (Print Name)/(Affiliation)		Date:													



CHAIN OF CUSTODY RECORD

L1727787

Page 1 of 1

Client/Project Name: USACE - NHH FNP		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encode		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°			
Project Number: 60543021		Field Logbook No.:																	
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM		Chain of Custody Tape Nos.:																	
Signature: 		Send Results/Report to: MARY O'CONNELL KOZIK		TAT: GHINSE 24hr CHEMISTRY-STD															
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	RAIN SIZE - SIEVE	METALS - 6020A/7474-7473	PCBS - 8082/8270 SIM	PESTICIDES - 8081 B	PAHS - 8270 D SIM	TOC - 9060	Lab I.D.	Remarks			
NHH - U - TOP	8/9/17	0705	X		807/1607	SD	40C	7/4	X	X	X	Y	X	Y		0 - 5'10"			
NHH - U - BOTTOM		0705	X						X	X	X	Y	X	X		5'10" - 30'			
NHH - P - TOP		1219							X	X	X	Y	X	X		0 - 5'9"			
NHH - P - BOTTOM		1219							X	X	X	Y	X	X		5'9" - 12'4"			
NHH - Q - TOP		1427							Y	Y	Y	X	X	X		0 - 5'3"			
NHH - Q - BOTTOM		1427							X	X	Y	X	X	X		5'3" - 29.5"			
NHH - W - TOP		1634							X	X	X	Y	X	X		0 - 5'6"			
NHH - W - BOTTOM		1634			807				X							5'6" - 8'2"			
NHH - V - TOP		1745			807/1607				X	X	X	Y	X	X		0 - 4'9"			
NHH - V - BOTTOM		1745							X	X	X	Y	X	X		4'9" - 8'7"			
<hr/>																			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM			Date: 8/9/17 Time: 1900		Received by: (Print Name)/(Affiliation) 			Date: 8/9/17 Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALWIP DRIVE WESTBOROUGH, MA									
Signature:			Date: 8/9/17 Time: 2109		Signature:			Date: 8/9/17 Time: 2129		ATTN: LIZ PORTA									
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:		Sample Shipped Via:									
Signature:			Time:		Signature:			Time:		UPS FedEx Courier Other									
Temp blank Yes No																			



CHAIN OF CUSTODY RECORD

Page 1 of 1

Client/Project Name: USACE - NHH FUR			Project Location: NEW HAVEN, CT			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4" 2 - H2SO4, 4" 3 - HNO3, 4" 4 - NaOH, 4" 5 - NaOH/ZnAc, 4" 6 - Na2S2O3, 4" 7 - 4"																	
Project Number: 60543021			Field Logbook No.:			<div style="display: flex; flex-direction: column; align-items: center;"><div>METALS</div><div>PAHS / PCB</div><div>PESTICIDES</div><div>CLB</div></div>						Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product																	
Sampler (Print Name)/(Affiliation): RYAN MCLEATHY / AECOM			Chain of Custody Tape Nos.:									Lab I.D.		Remarks																	
Signature: 			Send Results/Report to: MARY DIONNE KOLEK									TAT: STD																			
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered																							
NHH-EB-CORE-080917	8/9/17			X		W	42-3	1/4	X	X	X	X																			
										4x16 AMBER 1x250 mL 1x250mL HNO3																					
<div style="display: flex; justify-content: space-between;"><div>Relinquished by: (Print Name)/(Affiliation) RYAN MCLEATHY / AECOM Signature: </div><div>Date: 8/9/17 Time: 1900</div><div>Received by: (Print Name)/(Affiliation) Signature: </div><div>Date: 8/9/17 Time: 1858</div></div> <div style="display: flex; justify-content: space-between;"><div>Relinquished by: (Print Name)/(Affiliation) Signature: _____</div><div>Date: _____</div><div>Received by: (Print Name)/(Affiliation) Signature: _____</div><div>Date: _____</div></div> <div style="display: flex; justify-content: space-between;"><div>Relinquished by: (Print Name)/(Affiliation) Signature: _____</div><div>Date: _____</div><div>Received by: (Print Name)/(Affiliation) Signature: _____</div><div>Date: _____</div></div>																Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WESTBOROUGH, MA ATTN: LIZ PERLA															
																Sample Shipped Via: UPS FedEx Courier Other				Temp blank Yes No											



CHAIN OF CUSTODY RECORD

Page 1 of 1

Client/Project Name: USACE - NHH FMP		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Green Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCL 4" 2 - H2SO4 4" 3 - HNO3 4" 4 - NaOH 4" 5 - NaOH/ZnAc 4" 6 - Na2S2O3 4" 7 - 4"			
Project Number: 60543021		Field Logbook No.:																	
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM		Chain of Custody Tape Nos.:																	
Signature: 		Send Results/Report to: MARY O'CONNELL KOZIK		TAT: CHWYRE 24H (CHEMISTRY-STD)															
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	GRAN SIZE - SIEVE	METALS - 600A/74H-747B	PLBS - 8082/8370 SIM	RESTIGIDS - 8081 B	PAHS - 8270D SIM	TDC - 9060	Lab ID	Remarks			
NHH - U - TOP	8/9/17	0705	X		802/1607	SD	40C	NYA	X	X	X	X	X	X		0 - 5'10"			
NHH - U - BOTTOM		0705	X						X	X	X	X	X	X		5'10" - 30'			
NHH - P - TOP		1219							X	X	X	X	X	X		0 - 5'9"			
NHH - P - BOTTOM		1219							X	X	X	X	X	X		5'9" - 12'4"			
NHH - Q - TOP		1427							X	X	X	X	X	X		0 - 5'3"			
NHH - Q - BOTTOM		1427							X	X	X	X	X	X		5'3" - 29.5"			
NHH - W - TOP		1634							X	X	X	X	X	X		0 - 5'6"			
NHH - W - BOTTOM		1634			807				X							5'6" - 8'2"			
NHH - V - TOP		1745			807/1607				X	X	X	X	X	X		0 - 4'9"			
NHH - V - BOTTOM		1745							X	X	X	X	X	X		4'9" - 8'2"			
<hr/>																			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM			Date: 8/9/17 Time: 1900		Received by: (Print Name)/(Affiliation) 			Date: 8/9/17 Time: 1853		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WESTBOROUGH, MA PORTA									
Signature:					Signature:														
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:					Signature:														
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:					Signature:														
Sample Shipped Via: UPS FedEx <u>Courier</u> Other										Temp blank: <u>Yes</u> No									

Client/Project Name: USACE - NHA FNP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number: 60543021			Field Logbook No.:																			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:																			
Signature: 			Send Results/Report to: MARY O'CONNELL KOZIK			TAT: GAIN SIZE - 24H CHEMISTRY - STD																
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	GRAIN SIZE - SIEVE	METALS - 6020A/7474-7473	PCBS - 8082/8270 SIM	PESTICIDES - 8081 B	PAHS - 8270 D SIM	TOC - 9060	Lab I.D.	Remarks						
NHH - U - TOP	8/9/17	0905	X		807/1607	SD	40C	1/4	X	X	X	X	X	X		0 - 5'10"						
NHH - U - BOTTOM		0905	X						X	X	X	X	X	X		5'10" - 30"						
NHH - P - TOP		1219							X	X	X	X	X	X		0 - 5'9"						
NHH - P - BOTTOM		1219							X	X	X	X	X	X		5'9" - 12'4"						
NHH - Q - TOP		1427							X	X	X	X	X	X		0 - 5'3"						
NHH - Q - BOTTOM		1427							X	X	X	X	X	X		5'3" - 29.5"						
NHH - W - TOP		1634							X	X	X	X	X	X		0 - 5'6"						
NHH - W - BOTTOM		1634			807				X							5'6" - 8'2"						
NHH - V - TOP		1745			807/1607				X	X	X	X	X	X		0 - 4'9"						
NHH - V - BOTTOM		1745							X	X	X	X	X	X		4'9" - 8'7"						

Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/9/17 Time: 1900		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 3 WALKER DRIVE WEST BOROUGH, MA	
Signature:		Date: 8/9/17 Time: 5109		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 2129		Temp blank: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Courier <input type="checkbox"/> Other	
Signature:		Time:		Signature:		Time:			

Client/Project Name: USAEC - NHH FND		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number: 60543021		Field Logbook No.:		<div style="display: flex; justify-content: space-around;"> <div>METALS</div> <div>PAHS / PCB</div> <div>PESTICIDES</div> <div>CR6</div> </div>										Matrix Codes:						
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM		Chain of Custody Tape Nos.:												DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Signature: 		Send Results/Report to: MARY DONNELL KOZIK												TAT: STD						
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
10 NHH-EB-CORE-080917	8/1/17			X		W	4C-3	1/4	X	X	X	X	X	X			4x 1L AMBER 1x 250 mL 1x 250 mL w/ HNO3			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM			Date: 8/6/17 Time: 1900		Signature:			Received by: (Print Name)/(Affiliation) 			Date: 8/9/17 Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WESTBOROUGH, MA ATTN: LIZ POBIA							
Signature:			Date: 8/9/17 Time: 2129		Signature:			Date: 8/9/17 Time: 2129												
Relinquished by: (Print Name)/(Affiliation) 			Date: 8/9/17 Time: 2129		Signature:			Date: 8/9/17 Time: 2129												
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:		Sample Shipped Via:					Temp blank					
Signature:			Time:		Signature:			Time:		UPS FedEx Courier Other					Yes No					

Client/Project Name:
USACE-MHH-FMP

Project Location:
New Haven, CT

Project Number:
60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):
C. Steve Hone/AECOM

Chain of Custody Tape Nos.:

Signature:

Send Results/Report to:

TAT:

Analysis Requested

Container Type
P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation
1 - HCl, 4°
2 - H₂SO₄, 4°
3 - HNO₃, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na₂SO₃, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Grain Size	Metals - 6020A/7471B	PCBs - 8082/8210-SIM	Pesticides - 8081B	PAHs - 8200-SIM	TOC - 9060	Lab I.D.	Remarks
NHH-R-Top	8/14/17	0832	X		8oz/16oz	SD	4°C	NA	X	X	X	X	X	X		0-4'2"
NHH-R-Bottom		0832	X		"	SD	4°C		X	X	X	X	X	X		4'2"-7'8"
NHH-S-Top		0955	X		"	SD	4°C		X	X	X	X	X	X		0-6'0"
NHH-S-Bottom		0955	X		8oz	SD	4°C		X							6'0"-6'5"
NHH-J		1141	X		8oz/16oz	SD	4°C		X	X	X	X	X	X		0-5'5"
NHH-L		1300	X		"	SD	4°C		X	X	X	X	X	X		0-6'9"
NHH-K-Top		1409	X		8oz/16oz	SD	4°C		X	X	X	X	X	X		0-5'6"
NHH-K-Bottom		1409	X		8oz	SD	4°C		X							5'6"-8'2"
NHH-H-Top		1458	X		8oz/16oz	SD	4°C		X	X	X	X	X	X		0-5'5"
NHH-H-Rep-Top		1458	X		"	SD	4°C		X	X	X	X	X	X		0-5'5"
NHH-H-Bottom		1458	X		"	SD	4°C		X	X	X	X	X	X		5'5"-7'8"
NHH-I-Top		1548	X		"	SD	4°C		X	X	X	X	X	X		0-8"
NHH-I-Bottom		1548	X		"	SD	4°C		X	X	X	X	X	X		8"-2'6"

Relinquished by: (Print Name)/(Affiliation)

C. Steve Hone AECOM

Date: 8/14/17

Time: 1922

Signature:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date: 8/14/17

Time: 2002

Date:

Time:

Received by: (Print Name)/(Affiliation)

Smith AHC

Signature:

Received by: (Print Name)/(Affiliation)

Signature:

Received by: (Print Name)/(Affiliation)

Signature:

Date: 8/14/17

Time: 1928

Date:

Time:

Date:

Time:


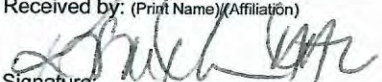

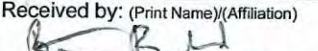

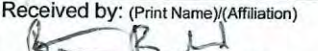
Analytical Laboratory (Destination):

Sample Shipped Via:

UPS FedEx Courier Other

Temp blank

Yes No

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number: 60543021		Field Logbook No.:		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Grain Size</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Metals - 602A / 7471B</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PCBs - 8082 / 8210-SIM</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Pesticides - 8081B</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PAHs - 8270D-SIM</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TOL - 9D60</div> </div>										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:												Send Results/Report to:		TAT:				
Signature: 																				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHH-G-Top	8/11/17	0837	X		802/1602 SD	4°C	NA	X	X	X	X	X	X	X					0-4'3"	
NHH-G-Bottom	8/11/17	0837	X		802/1602 SD	4°C		X	X	X	X	X	X	X					4'3"-13'8"	
NHH-C-Top		1033	X		802/1602 SD	4°C		X	X	X	X	X	X	X					0-2'10"	
NHH-C-Bottom		1033	X		802/1602 SD	4°C		X	X	X	X	X	X	X					2'10"-8'0"	
NHH-B		1157	X		Ziploc/1602 SD	4°C		X	X	X	X	X	X	X					0-4.2'	
NHH-B-MS		1157	X		Ziploc/1602 SD	4°C		X	X	X	X	X	X	X					0-4.2'	
NHH-B-MSD		1157	X		Ziploc/1602 SD	4°C		X	X	X	X	X	X	X					0-4.2'	
NHH-A-Top		1340	X		802/1602 SD	4°C		X	X	X	X	X	X	X					0-2'2"	
NHH-A-Bottom		1340	X		802/1602 SD	4°C		X											2'2"-9'9"	
NHH-D-Top		1507	X		802/1602 SD	4°C		X	X	X	X	X	X	X					0-4'9"	
NHH-D-Bottom		1507	X		802/1602 SD	4°C		X	X	X	X	X	X	X					4'9"-10'4"	
NHH-F-Top		1650	X		802/1602 SD	4°C		X	X	X	X	X	X	X					0-3'2"	
NHH-F-Rep-Top		1650	X		802/1602 SD	4°C		X	X	X	X	X	X	X					0-3'2"	
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/11/17 Time: 1925		Received by: (Print Name)/(Affiliation) 			Date: 8/11/17 Time: 1925		Analytical Laboratory (Destination):										
Signature: 					Signature: 															
Relinquished by: (Print Name)/(Affiliation) 			Date: 8/11/17 Time: 2237		Received by: (Print Name)/(Affiliation) 			Date: 8/11/17 Time: 2237												
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:		Sample Shipped Via: Temp blank										
Signature:			Time:		Signature:			Time:												
UPS FedEx Courier Other										Yes No										

AECOMPage 2 of 2[illegible]

Client/Project Name:
USACE - NHH - FNP

Project Location:
New Haven, CT

Project Number:
60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):
C. Steve Howe AECOM

Chain of Custody Tape Nos.:

Signature:
[Signature]

Send Results/Report to:

TAT:

Analysis Requested

Container Type
P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation
1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered
---------------------------------	------	------	---------	---------	-------------------------------	--------	----------	----------------

NHH-E-Top	8/14/17	0832	X		802/1602	SO	40C	NA
NHH-E-Bottom	8/14/17	0832	X		802/1602	SD	40C	NA

Gran Size
Metals
PCBs
Pesticides
PAHs
TOC

Lab I.D. Remarks

0-6'6"
6'6"-8.1'

Relinquished by: (Print Name)/(Affiliation)
C. Steve Howe AECOM

Date: **8/14/17**
Time: **1509**

Received by: (Print Name)/(Affiliation)
[Signature]

Date: **8/14/17**
Time: **1509**

Analytical Laboratory (Destination):

Relinquished by: (Print Name)/(Affiliation)
[Signature]

Date: **8/14/17**
Time: **1712**

Received by: (Print Name)/(Affiliation)
[Signature]

Date: **8/14/17**
Time: **1712**

Relinquished by: (Print Name)/(Affiliation)
[Signature]

Date: **8/14/17**
Time: **1815**


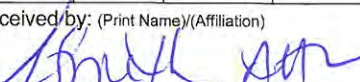


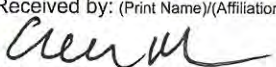
Received by: (Print Name)/(Affiliation)
[Signature]

Date: **8/14/17**
Time: **1815**

Sample Shipped Via:
UPS FedEx Courier Other

Temp blank
Yes No

Client/Project Name: USACE- NHF FNP				Project Location: NEW HAVEN, CT				Analysis Requested				Container Type		Preservation	
Project Number: 60543021				Field Logbook No.:								Matrix Codes:			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM				Chain of Custody Tape Nos.:								DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Signature: 				Send Results/Report to: MARY DONOVAN KOZIK				TAT: STD							
Field Sample No./Identification	Date	Time	COM P	GRA B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	METALS	PAHs/PCB	PESTICIDES	CR6	Lab I.D.	Remarks	
NHH-ED-MISL-081717	8/17/17	1135		X		W	4°C-3	N/A	X	X	X	X			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY				Date: 8/17/17		Received by: (Print Name)/(Affiliation) 				Date: 8/17/17		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOROUGH, MA PORTA			
Signature:				Time: 1840		Signature:				Time: 1840					
Relinquished by: (Print Name)/(Affiliation) 				Date: 8/17/17		Received by: (Print Name)/(Affiliation) WILL DELAAL				Date: 8/17/17		Sample Shipped Via: UPS FedEx Courier Other			
Signature:				Time: 2055		Signature:				Time: 2055					
Relinquished by: (Print Name)/(Affiliation)				Date:		Received by: (Print Name)/(Affiliation)				Date:		Temp blank Yes No			
Signature:				Time:		Signature:				Time:					

Client/Project Name: USACE - MHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested <div style="display: flex; justify-content: space-between;"><div>METALS</div><div>PAHs/PCBS</div><div>PESTICIDES</div><div>CR6</div></div>				Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°												
Project Number: 605 43021			Field Logbook No.:							Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product														
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:							Lab I.D.				Remarks										
Signature: 			Send Results/Report to: MARY O'NEILL KOSIK			TAT: STD																		
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered																
UHH-EB-GRAB-081717	8/17/17	1155		X					X	X	X	X												
UHH-EB-PUMP-081717	8/17/17	1600		X					X	X	X	X												
[Large X mark across the table]																								
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY			Date: 8/17/17		Received by: (Print Name)/(Affiliation) 			Date: 8/17/17		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOROUGH, MA ATTN: LIZ PORTA														
Signature: 			Time: 1840		Signature:			Time: 1840																
Relinquished by: (Print Name)/(Affiliation) 			Date: 8/17/17		Received by: (Print Name)/(Affiliation) 			Date: 8/17/17																
Signature:			Time: 2053		Signature:			Time: 2053																
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:																
Signature:			Time:		Signature:			Time:		Sample Shipped Via: UPS FedEx <u>Courier</u> Other														
										Temp blank: <u>Yes</u> No														

Attachment 5 New Haven Harbor 2017 Field Log Books

CONTENTS

Location NHH - New Haven Harbor Date 8/8/17
Project / Client NHH FMP - USACE

3

0650 ARRIVE LONG WHARF PIER

RYAN MCARTHY	C. SIENE HOWE
TODD RANDALL	KEN CADMUS
JEFF PYDESKI	MORGAN BARRETT
TINA MERRITT	

of a LOAD VESSEL

0715 PROJECT SHAF TAILGATE/
KICKOFF W/ JINA MERRITT

0820 DEPART DOCK FOR X,Y,Z
TRANSECT

0830 BEGIN ANCHOR SET AT X

Strong petroleum odor near
terminal

Location NHHDate 8/8/17Project / Client FNP - USACE

NHH-X

E 956695.4

N 669144.5

Low Tide

0627

HIGH TIDE

1234

Moon Pos DEPTH - 22.0

GROSS CORE IN THE WATER

0922 CORE ON DECK

PEN - 10.0'

0936 Opening core NHH-X

NHH-X 0-4'9" black silt

NHH-X 4'9"-

4'9"-5'2"

dark organic silt

5'2"-8'0"

8'0"-9'9"

0-5'2"

5'2"-8'

fine sand, dark tan

coarse sand, end

Sample - Top

Sample - Bottom

Location NHHDate 8/8/17Project / Client FNP - USACE

1015 moving to next location

NHH-Y

40.5' WATER

BARGE COMING THROUGH CHANNEL
MAY HAVE TO MOVE

NHH-Y

1037 Core on deck

10' penetration

9'4" recovery

E

956935.61

N

668934.77

1054 opening core

1122 moving to NHH-Z

1142 on NHH-Z

Tug approaching to
move nearby tanker.

Positioning to move tanker

1150 beginning core

E 957127.6

1153 Core on deck

10'0" penetration

9.7' recovery

N 668767.6

6

Location NEW HAVEN, CT Date 8/8/17
 Project / Client NHH FNP / USACE

1235 En Route to next core
 STATION NHH-N E 955867.6
 N 665076.8

1305 ~~HA~~ NHH-N on deck
 10.0 penetration
 9.3 recovery

1343 moving to NHH-O

1402 On NHH-O
 Core target is 10.7 ft
 switching from 10-foot
 core barrel to 20-foot
 E 956251.1
 N 665020.3

1438 begin core NHH-O

1444 core on deck

PEN 13.0'
 13.4 recovery

534
 moving to NHH-M

Location NEW HAVEN CT Date 8/8/17 7
 Project / Client NHH FNP / USACE

1555 on NHH-M

DIFFICULTY ANCHORING ON SOFT BOTTOM
 ANCHORS WERE PULLING, CONSENSUS
 WITH TODD FANDALL TO TAKE CORE
 AT CURRENT LOCATION (WITHIN 14.0'
 OF TARGET) AND WITHIN CHANNEL,
 NEAR SLOPE

1610 core on deck

PEN 10.0'

E 955479.97
 N 665130.38

1645

moving to STATION T

A 1707 AT NHH-T
 1734 core on deck

E 955476.0
 N 667998.7

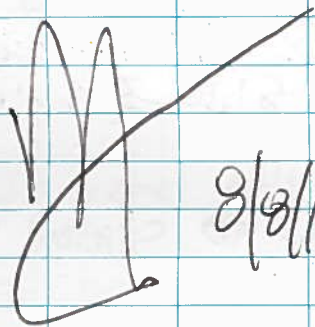
Location NHH Date 8/8/12Project / Client NHH-FNP / USAF1840 CORING OPS COMPLETE
FOR DAY

COLLECTED STATIONS

X, Y, Z, M, N, O, T

1850 BACK AT DOCK / UNLOAD

1915 PACK UP BOAT / HEAD OFFERS


 8/8/12
Location NEW HAVEN, CT Date 8/9/12Project / Client NHH-FNP / USAF

0650 ARRIVE LONG WHARF

R. MCCARTHY

J. PYDESKI

C. STEVENS

M. BARRETT

TODD RANDALL

0715 LOAD BOAT / SHAE BRIEFING

0730 CHANGE TO 30' BARRIER
FOR LONG CORE STATIONS

0810 LEAVING DOCK FOR NHH-U

0844 Setting up for NHH-U
revised target length - 32+ ft
longest core barrel = 30 feet0905 Core on deck FULLER /
RECORDY

1020 PROCESSING COMPLETE

E 955696.4

N 667963.6

MOVING TO STATION NHH-P

WILL COLLECT ARCHEOLOGICAL CORE

Location NEW HAVEN CT Date 8/9/17Project / Client NHH - FNP / USACE

TARGET

E 955172.0

N 667298.2

1050 NHH location - NE 667298.2
archeological core

1102 start NHH-P archeological

1113 NHH-P "a" on deck

Pg	0 - 2.8 Ft
Pf	2.8 - 5.8 Ft
Pe	5.8 - 10.8 Ft
Pd	10.8 - 15.8 Ft
Pc	15.8 - 20.8
Pb	20.8 - 24.6
Pa	24.6 - 29.6

30 penetration
29.6 recovery

TARGET

E 955172.0

N 667298.2

1210 begin NHH-P

1219 core on deck

NHH-P - APPROX 5 GALLONS
RETAINED (TOP + BOTTOM)

Location NEW HAVEN CT Date 8/9/17Project / Client NHH - FNP / USACE1409 ON STATION NHH-Q
+ TARGET

E 955500.1

N 667254.5

TARGET PEN IS 31.8'. TAKING
30' CORE

1415 Problem with core haul

1419 Driving core

1427 Core on deck

1615 ON STATION NHH-W

1634 core on deck

1725 ON STATION NHH-V

1745 EQUIPMENT BLANK

NHH-EB-CORE-080917

1745 CORE ON DECK E-956178.56

N-667909.02

Location NEW HAVEN CT Date 8/1/17Project / Client NHH FNP - USACE

1820 CORING OPS COMPLETED FOR
 DAY HAVING FACTORS / REVENUE
 IN LOW WATER

COLLECT 5 STATIONS

V, P, Q, W, U

AND EQUIPMENT BLANK

1840 BACK AT DOCK

Location New Haven, CT Date 8/10/17Project / Client NHH - FNP - USACE

0715 - Loading for day
 - HQS

Clare Murphy - Hagan AECOM

C. Stonehouse AECOM

Todd Randall USACE

Jeff Rydski OSI

Morgan Barrett OSI

0745 On Way to NHH-R

0832 core on deck

0913 moving to NHH-S

0940 begin core NHH-S

0955 core on deck

956558.51

667100.36

1100 Setting up on NHH-J

955157.82

666662189.41

Location New Haven, CT Date 8/10/17
 Project / Client NHH-FNP-USACE

water depth 35.0
 tide - (+4.0)
31.0

Project depth 24.5 + 2 over
 26.5
 no core needed here

Todd verified
 Can-Du exploring channel
 in vicinity of NHH-J to
 find appropriate core location

1127 Reset location NHH-J to
 955130.54
 662186.32

adjusted depth 21.1
 project depth 24.5
3.4
 + 2 over
5.4 core

1141 Core on deck

Location New Haven, CT Date 8/10/17 15
 Project / Client NHH-FNP-USACE

1225 Arrived coming into
 harbor, moving to NHH-L

1254 begin NHH-L
 955734.84 662225.81

1300 Core on deck

1409 Core NHH-K on deck
 955275.32 662195.02

1450 Heading to NHH-H
 955073.00

1540 On location 656256.70
 had to wait for Ty to pass

1543 begin core

1548 NHH-H on deck

1709 At NHH-I
 Swapping to 20 foot barrel
 955525.41 656249.42

1746 core on deck
 heavy recreational
 and commercial boat
 traffic

Location New Haven Harbor Date 8/10/17
 Project / Client NHH FNP USACE

Processed core in transit
 to dock

18:47 At Dock

1928 Samples to Alpha

1946 Leaving site

CSH

Location New Haven Harbor Date 8/11/17
 Project / Client NHH FNP USACE

0745 CanDn departing Long
 Wharf Pier
 Clare Murphy Hagan AECOM
 Jeff Pydett OSI
 Morgan Barrett OSI
 Todd Randall USACE
 C. Steve Howe AECOM

0831 Set up on ~~NHH-I~~ NHH-G
~~955525.41 656249.42~~ CSH

0837 Core on Deck

0929 Picking up to move
 offshore

1000 Settling up at NHH-C
 956248.06 642180.93

1033 Core on deck

1145 Set up on NHH-B

1157 core on deck
 collected MS/MSD at "B"

1249 Preparing for travel to "A"

1020 complete volume requirement
from station P, transit
to station T

1040 on station at T $N 667994.28$
 $E 955470.86$

water depth 10.5
tide (+0.41)

Core T₂
target depth 16.3

19.3 rec | 19.5 pen

No sand layer observed

1115 start arc. core at station T $E 955480.71$
 $N 668007.12$
water depth 11.5
tide 1.06

19.5 pen 18.9 rec

Arc Core T₃
Td ~~Td~~ 0-3.9
Tc ~~Tc~~ 3.9-8.9
Tb ~~Tb~~ 8.9-13.9
Ta ~~Ta~~ 3.9-18.9

1220 complete volume requirement
at station T. transit
to station Z.

1235 Tug boat around station
Z. waiting for him to
leave before we get on
station.

water level 38.2

1250 Swap out left core
barrel for 10 ft

1300 on station at Z

Location New Haven Harbor Date 08/12/17

Project / Client _____

1315 Station Z (core #1) E 957123.41
N 669771.32
water depth 91.0
tide - (+4.19)

per 10.0 / Rec 9.7

1350 Station Z (core #2) E 957111.38
N 668772.82
water depth 42.7
tide - (+5.24)

per 10.0 / Rec 9.5

1500 complete volume requirement
at Station Z (2 buckets)
mobilize to Station X.

SCUS on Station X

Core #1 WL: 24.9 E 95668.44
N 669949.64
- (+6.9)

per 10.0 / 9.5 Rec
Sand @ 5' 8" lines

Location New Haven Harbor Date 08/12/17 23

Project / Client _____

1600 Station X E 956688.65
Core #2 N 669150.55
water level: 24.7
tide: 6.49 @

- sand 3 ft 5' 8" 3"

per 10 / rec 9.0

1700 collect archaeological
Core for Station X

water level: 22.7
tide: (+5.6)

10.0 per 9.4 rec E 95668.56
N 669150.44
1710 Arc. Core X4
Xb 0-4.4
Xa 4.4-9.4

1745 complete volume at Station X
transport back to dock to
upload @ denbe.

1830 orbit to hotel 5 of 5

Location New Haven Harbor Date 08/13/17

Project / Client _____

0745 Candy departs long
 wharf pier
 - Rachel Machee (AECOM)
 - Marc Smith (AECOM)
 - Jeff Rydesh (OSI)
 - Morgan Barrett (OSI)

- HOS meeting

- 0750 mobilize to station Y

0820 station Y core #1 N 668944.73
 E 956945.53
 water level 37.3

tide (-1.23)
 per 10.0 / rec 7.1

station Y core #2 N 668936.98
 E 956949.45
 water level @ 36.5 35.8

per 10.0 / rec 4.5 tide (-0.78) 0.26

* Sand @ 6' 4" on core #1
 collected to 6' 4" for
 composite sample.

inf

New Haven Harbor Date 08/13/17 25

Project / Client _____

0915 hydraulic head malfunctioning
 OSI crew swapping out
 spare head.

Station Y core #3 N 668932.79
 E 956952.61
 water level: 36.0

per 10.0 / rec 0.25

* Sand at 4' 9" on
 core #2 collected to
 4' 9" for core #2

* Sand at 5' 2" on
 core #3 collected to
 5' 2" for core #3

1100 Volume requirements complete
 for station Y describe
 and transit to station M

①

7 of

New Haven Harbor Date 08/13/17

37.2 244

1130 core #1 Station M N 665135.21
 water level: 29.4 E 955472.89
 tide: (+1.47) 10.0 per / 9.6 rec

1155 core #1 at station M
 Archaeological (core)
 Mb 0-4.6
 Ma 4.6-9.6

1220 Core #2 at station M
 water level 32.2 N 665121.53
 tide: - (2.44) E 955479.04
 10.0 per / 9.5 rec

1245 Core #3 at station M
 water level: 34.9 N 665121.11
 tide: 3.33 E 955480.98
 10.0 per / 9.3 rec

1400 head to dock to fuel
 up Boat

New Haven Harbor Date 08/13/17²⁷

1430 Complete fuel-up. Head
 to next station, NHH-N

1515 core #1 at station-N N 665079.31
 water level: 42.3 E 955883.16
 tide: (+6.33)
 10.0 per / 9.5 rec

1550 Core #2 at station-N N 665076.57
 water level: 42.7 E 955885.20
 tide: - (4.79)
 10.0 per / 9.3 rec

★ Core #1 Sand @ 5' 9"
 Sample for composite
 taken from 0-5' 9"

★ Core #2 Sand @ 4' 3"
 Sample for composite
 taken from 0-4' 3"

Location New Haven Harbor Date 08/13/17

Project / Client _____

1710 Core #3 at Station N
 water level: 40.0
 @ water depth tide - (6.84)
 10.0 pen / 9.3 rec
 N 665 073.56
 E 955 888.76

* Core #3 Sand at 5'
 composite sample taken
 from 0-5' from this
 core

(N,

Lars

Location New Haven Harbor Date 8/14/17Project / Client NHH-FNP-USACE

0730 Can On departing Long
 Warf Pier for core
 NHH-E C. Steve Howe, Marc
 Smith, Jeff Rydick, Morgan Barnett
 0805 Setting up at NHH-E
 0832 Core on deck
 954719.81 651097.16
 0-4'4" black silty
 clay, no real change
 in color, composition,
 or cohesiveness

1003 Setting up at NHH-J
 for volume and Archaeological

1016 Start NHH-J "a"
 10.0 pen 9.4 rec
 Jb Pb 0-4.4'
 Ja Pa 4.4-9.4'

1019 NHH-J "a" on deck
 "J2" in OSI
 955126.43 662180.87
 1048 NHH-J3 on deck

- 1113 10.0 pen 9.5 rec
NHH-J4 on deck
10.0 pen 9.5 rec ^{33s}
955122.23 662182.68 ^{cores}
5.5 gallons w/cores at J
955121.04 662186.48
- 1159 Pulling anchor for NHH-K
- 122 > At NHH-K2
38.1' depth +1.65 tide
955337.20' 662203.78
- 1232 NHH-K2 on deck
10.0 pen 8.9 rec
3.5' organic silt
over 1 ft grey clay and
red sands to bottom
collected 0-3.5'
- 1316 NHH-K3
39.8', 2.87 tide
- 1328 core on deck
9.0 pen 8.0 rec
955327.41 662203.30

- 1344 prepping for NHH-K4
40.6 down, 3.57 tide
- 1353 core on deck
10.0 9.1
6.5' black organic silt
over sand
955325.72 662195.65
- 1427 picking up anchor
for Long Wharf Pier
- 1455 At Pier
- 1520 Morgan Barnett off boat
Kevin Murphy on boat
Leaving Pier for "O"
- 1614 NHH-O2 on deck
956239.02 665017.20
- 1656 Set up at NHH-O3
956246.99 665012.24
- 1755 heading back to Pier
- 1803 On Pier / ^{CSH}

Location New Haven Harbor Date 8/15/17
 Project / Client NHH-FNP-USACE

0745 Can Du departing to "w"
 Kevin Murphy
 Jeff Rydelski
 Clare Murphy-Hogan
 C. Steve Howe

0840 NHH-W "a" on board
 NHH-W2 on OSI records
 10.0 per 9.2 rec
 NHH-W B 0-4.2
 956641.18 667825.42 A 4.2-9.2

0923 NHH-W3 on deck
 10 per 9.7 rec
 956640.71 667830.90

0955 NHH-W4 on deck
 956635.09 667828.03
 10.0 per 9.4 rec

1105 NHH-S - 2 vol cores
 1 arch core

1114 NHH-S "a" on deck
 NHH-S2 in OSI log
 10.0 per 9.8 rec
 956557.67 66711.26

Location New Haven Harbor Date 8/15/17 33
 Project / Client NHH-FNP-USACE

NHH-S B 0-4.8
 A 4.8-9.8

NHH-S3 on deck at 1140

10.0 per 9.7 rec
 956560.08 667106.98

1216 NHH-S4 on deck
 10.0 per 9.8 rec
 956566.16 667108.06

1301 Heading to L
 Heavy tug/cargo traffic
 in northern portion of
 harbor

1347 core NHH-L2 on deck

10.0 per 9.1 rec
 955727.81 662220.69

1425 core NHH-L3 on deck

10.0 per 9.2 rec
 955733.02 662219.97

1526 core NHH-L4 on deck

955744.24 662223.11

Location New Haven Harbor Date 8/15/17Project / Client NHH-FNP-USACE

60543021

pen 10.0 rec 9.9

1619 Setting up on V

1646 NHH-V-2 on deck

Pen 9.8 Rec 8.9

956170.32 667900.95

1735 Can Ru on pier

Location New Haven Harbor Date 8/16/17 35Project / Client NHH-FNP-USACE

Weather: Sunny 80's

60543021

0700 At Long Wharf Pier
Prepping for day0730 H&S Meeting
- Discuss heat stress

0745 Depart Dock

0829 ~~NHH-12~~^{CSH} on deck R2
10.0 pen 9.8 rec ≡
black organic silt 0-9.8
956066.14 667161510942 At NHH-H
waiting for tug to pass
before finalizing location
near power line1027 NHH-H2 on deck
10.0 pen 9.7 rec
955092.89 656254.49
large freighter coming into
harbor, tugs

60543021

10:44 NHH-H-3 setting up
 28.4 +d, 2.43 tide
 36.0 corrected
 955099.48 656261.60

10:52 core on deck

NHHH2 5.5' black organic
 silt & clay over moderately
 plastic grey silty clay
 with some shells.
 wood horizon at 9.5-9.8

original sampling horizon
 included some grey clays
 returned 0-6.5 ft for
 volume sample

NHHH3 black organic ~~silt & clay~~
 silty clay
 to 8', 0.1' grey clay
 over brown silt
 collected 0-7.7

11:46 heading to NHH1-E
 12:16 At NHH-E
 12:30 Core on deck
 10.0 per 9.9 rec

12:56 NHH-E2 on deck
 954721.12 651092.30

12:21 NHH-E3 on deck
 10.0 per 9.8 rec
 954726.90 651096.85

~~12:22~~
 NHH-E2 0-9.7 black-dark grey
 silt and clay, grey clay on
 bottom
 NHH-E3 0-7.5 dark silty clay
 over gray plastic clay

13:33 Snapping to 20' barrel
 Choppy seas, will try
 D all E. If unsafe will
 move back into bay

Location _____ Date 8/16/17

Project / Client _____

14:43 NHH-D2 on deck
 15.5 pen 15.8 rec
 954356.69 GS1064.47
 1 ft shell rich dark
 grey silty clay
 dark grey silty clay
 moderately plastic to 10.3
 9.3. Highly plastic from
 9.3 to bottom of section
 at 11.8 feet

1607 NHH-Fa on deck
 NHH-F2 in OSI records
 954927.28 GS1078.18
 NHH-F C 0-4.2
 NHH-F b 4.2-9.2
 NHH-F o 9.2-14.2

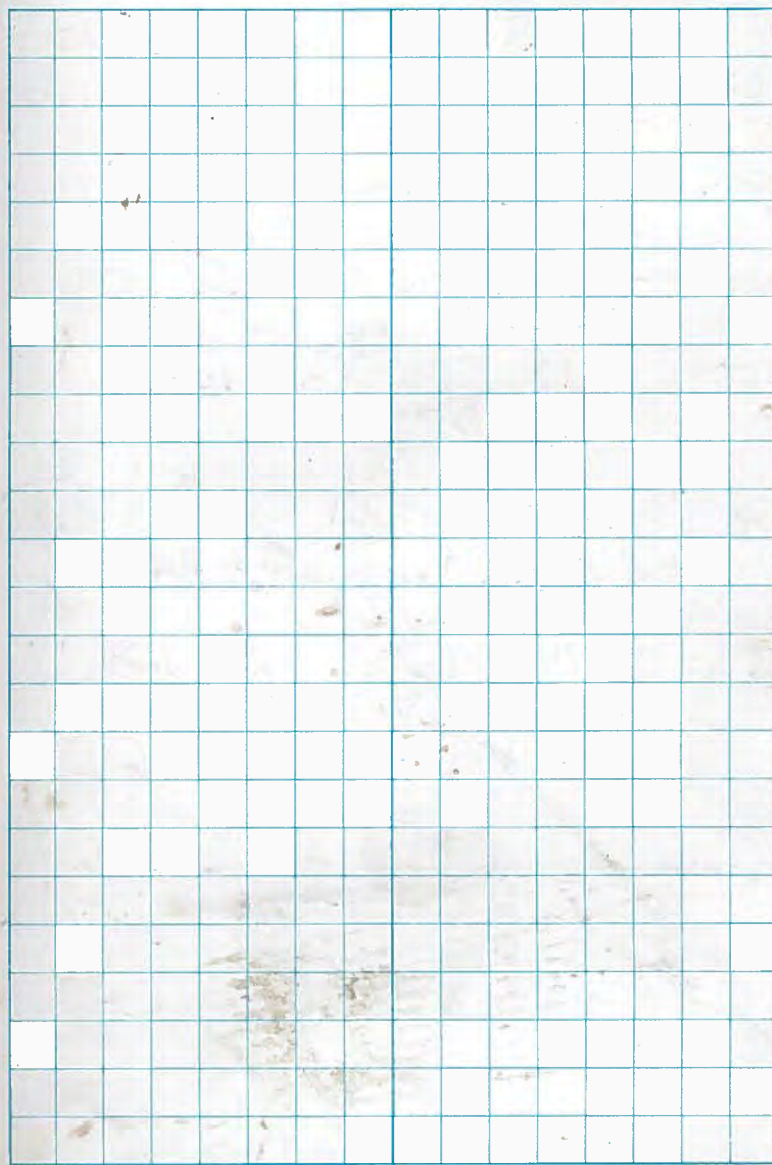
1658 NHH-F3 on deck
 954923.40 GS1073.35

1745 Pulling anchor at F

1820 At Pier, offloading
 GSH

Location _____ Date 8/16/17

Project / Client _____



Location New Haven Harbor Date 8/17/17
 Project / Client NHH-FNP-USACE

0700 At Long Wharf Pier prepping for day

0745 H's Meeting
 - new techniques
 - multiple OSI RVs

0750 Heading to "G"

0835 At NHH-G
 archaeological & Volume
 2 cones

0854 NHH-G "a" on deck
 - NHH-G2 in OSI Records
 19.5 19.6

NHH-G2d 0-4.6 csh
 c 4.6 - 9.6
 b 9.6 - 14.6
 a 14.6 - 19.6

0934 NHH-G2 on deck

16.0 16.0

0-2 black org soft
 silty clay loose

2-5 moderately firm

black org, silty & dk
 5-6 dk gray firm/stiff

glay "

to 11 "

11-13 "
 13-16 stiff, dark gray
 clay, some shelly
 horizons

increasing stiffness ↓

1010 Swapping from 20' to
 5' barrel

1030 Heading to C
 need 23 gallons from
 top 2.8 ft + archaeological

1110 At NHH-C

1143 C2 on deck
 archaeological

Location _____ Date 8/17/17

Project / Client _____

5.0 pen 4.7 rec

NHH-C "a"

C2A 0-4.7

1217

C3 on deck

5.0 pen 4.6 rec

1220

RV Ready II - OSI

Ken Adams

Ryan McCarthy

dropped off small gas sign

1240

C4/CS on deck

2.5' pen

move a few feet

2.5' pen

5.0 ft total pen

4.6 recovery

Location _____ Date 8/17/17

Project / Client _____

C3 ~2' dark grey
silty clay, with
shells and some sand
over3.7' less dark, similar
materialsC4/CS ~2' dark grey
over ~4 foot lighter
material. Below ~3
feet, darker material
returns

Double core (C4/CS) has
about 1 foot of blue material
from first hit at C4. C3
has about half foot in
upper 2.5 of sampling depth.
Similar overall comp. in
a double core ~~vs~~ (5') vs.
two single cores (2 x 2.5')

1334 C6/7 on deck

1 single (C3) plus 2
doubles (C4/5, C6/7) filled
5 gallons

1355 begin coring C8/C9

1403 C8/9 in bucket
2 gallons

AECOM & OSI names
may not match
look at sequence

1415 begin coring C10/11

1420 Core on deck

1440 begin coring C12/13

1450 Freighter exiting harbor
waiting for it to pass
before continuing work

1536 Isola Blue Freighter passed
2nd Freighter out again

1531 Begin C14/15

1537 core on deck

1555 C16/17 on deck
12 gallons

~~1617 C18/19~~ CSH

1617 C18/19 on deck
CSH ~~21~~ gallons 19 + gallons

NOAA page issues for
tide corrections

1653 C20/21 on deck

1712 C22/23 on deck

1735 Pulling anchor

1759 Heading to Pier

1811 ~~At Long Wharf Pier~~

CONTENTS

Location NEW HAVEN, CT

Date 8/17/17

3

Project / Client NHH-FND

0650 2 MURPHY ARCADE
BRANFORD STATE RAMP

R. NOCARTY - Atom

K₁ CADMS - OS

M. LINCOLN - OS 1

WY
SUNNY
75°F

0700 LAUNCH BOAT

HIGH TIDE ~
0745

0715 DOCKSIDE SH + E BRIEFING

0730 DEPART FOR CLDS

NOW FOR TODAY IS TO SAMPLE
 CLOS REF SITE FOR SEDIMENT
 AND WATER, THEN SAMPLE NEW
 HAVEN HARBOR FOR WATER
 AT 3 LOCATIONS (INNER, MID, OUTER)
 INNER - NEAR ANCHORAGE
 MID - NEAR GHI TRAMPORT
 OUTER - CLOSE TO BREAKWATER

Location NEW HAVEN, CTDate 8/17/17Project / Client NH12 - FMP

0755 AT ELOS REF TO BEGIN
SEDIMENT GRAB SAMPLING

E 976671.17 CT STPL
N 609872.57 FT
83' DEEP

FIRST GRAB IN VAN VEEN
FIELDS APPROX 5 GALLONS

OF GREY BROWN SOFT SILT MOST
NO SAND CONTENT / CONSISTENT

THROUGH. SEVERAL JELLYFISH OBSERVED
(2-3')

IN GRAB AND EXCLUDED
FROM SAMPLE

0820 E 976669.43 84'
N 609902.18 DEEP

BAD GRAB XH

0835 SUCCESSFUL FULL PEN GRAB (#6)
CONSISTENT MATERIAL WITH NO SAND

Location NEW HAVEN, CTDate 08/17/17Project / Client NH12 - FMP

BAD GRABS III

0900 GOOD GRAB (#10)

MATERIAL IS SOFTER / HIGHER
MOISTURE CONTENT THAN PREVIOUS
2 SUCCESSFUL GRAB APPROX 4.5 GALS

BAD GRABS IIII

0930 SWITCHING TO SMALLER PUMP
BECAUSE VAN VEEN

0940 GOOD GRAB - ~ 2 1/2 GALS

0945 GOOD GRAB - ~ 2 1/2 GALS

0950 GOOD GRAB ~ 2 1/2 GALS

0955 GOOD GRAB ~ 2 1/2 GALS

SAMPLING FOR SEDIMENT CORRELATION

MOVING TO WATER SAMPLING
USING NISKIN BOTTLE

Location NEW HAVEN, CT Date 8/17/17
 Project / Client NHH-FNP

WATER DEPTH APPROX 85'
 + ANCHORING ~ 80' (TO ACCOUNT FOR
 MUSHROOM ANCHOR BELOW BOTTLE) FOR
 "BOTTOM" SAMPLE

1015 FIRST SAMPLE - BOTTOM.

1030 SECOND SAMPLE - BOTTOM 10 GAL
 COLLECTED

1045 COLLECTED FIRST MID SAMPLE
 AT APPROX 72'

1100 COLLECTED SECOND MID SAMPLE
 10 GALLONS COLLECTED

1110 FIRST TOP SAMPLE COLLECTED
 AT APPROX 3-5'

1115 SECOND TOP SAMPLE COLLECTED
 10 GAL COLLECTED
 30 GALLONS COLLECTED

Location NEW HAVEN, CT Date 8/17/17
 Project / Client NHH-FNP

1135 - EQUIPMENT - NISKIN BOTTLE
 OCEAN TEST EQUIPMENT RINSE
 3+ LITER CAPACITY BLANK

NHH-EB-NISK-081717

NISKIN BOTTLE AND C-FLEX TUBING

1155 VAN VEEN / PONAR / SPOON
 RINSE BLANK

NHH-EB-GRAB-081717

HEADED TOWARDS NEW HAVEN HARBOR

1215 HAND OFF GRAB SAMPLER
 TO R/C CANDO

1230 ANCHOR BETWEEN NHH-E
 AND NHH-F FOR WATER
 SAMPLE NHH-E.

1300 BEGIN SAMPLING NHH-E
 APPROX 20' WATER DEPTH SAMPLE

Location NEW HAVEN, CT Date 8/17/17
 Project / Client NHH - FNP

TAKEN AT APPROX 101

1325 SAMPLE COMPLETE

HEAD TO DOCK TO OFFLOAD
 SAMPLES INTO REEFER

1335 BACK AT LONG WHARF TO
 OFFLOAD

1410 BOAT UNLOADED
 HEADED BACK OUT TO
 GHI TRANSECT

1425 SETTING UP ON SIDE
 OF CHANNEL NEAR NHH-1
 5 MIN SITE WATER PURGE

1430 SAMPLING NHC-F
 SAMPLE AT 9' WATER DEPTH 13'

1506 SAMPLE COMPLETE
 35 GALLONS COLLECTED

Location NEW HAVEN, CT Date 8/17/17
 Project / Client NHH - FNP

MOVING TO ANCHORAGE "UPPER"
 AREA NHC-V

SAMPLE IN AREA BETWEEN
 U+Q ON SIDE OF CHANNEL

WATER DEPTH 21'

SAMPLE AT 10.5'

1523 5 MINUTE PURGE WITH
 SITE WATER

1528 BEGIN SAMPLE

1555 COMPLETE SAMPLE

1600 COLLECT RINSE BLANK ON
 PUMP/TUBING

NHH-EB-PUMP-08177

Location _____ Date _____

Project / Client _____

1627 GRAB SAMPLING NHH-1

3 PONAR SAMPLES

3 VAN VEEN SAMPLES
10 GALLONS COLLECTED

1700 RETURN TO LOW WATERS

1715 UNLOAD

1600 STEAM FOR BRANFORD

1635 BACK AT BRANFORD DOCK

Location _____ Date _____

Project / Client _____

Appendix C Grain Size Data

Rapid Grain Size Results (ASTM D6913)



ANALYTICAL REPORT

Lab Number:	L1727561
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	12/13/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1727561-01	NHH-X-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727561-02	NHH-X-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727561-03	NHH-X-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727561-04	NHH-Y-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 10:37	08/08/17
L1727561-05	NHH-Y-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 10:37	08/08/17
L1727561-06	NHH-Z-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1727561-07	NHH-Z-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1727561-08	NHH-N-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 13:05	08/08/17
L1727561-09	NHH-N-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 13:05	08/08/17
L1727561-10	NHH-O-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 14:45	08/08/17
L1727561-11	NHH-O-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 14:45	08/08/17
L1727561-12	NHH-M	SEDIMENT	NEW HAVEN, CT	08/08/17 16:10	08/08/17
L1727561-13	NHH-T-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17
L1727561-14	NHH-T-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

Case Narrative (continued)

Report Reissue

This report replaces the report issued on August 9, 2017. The RIM QC Summary Form is included as an addendum.

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1030340-1 Laboratory Duplicate RPD for % Coarse sand (35%), performed on L1727561-08, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 12/13/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-01
Client ID: NHH-X-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	1.20		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	11.0		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	87.8		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-02
Client ID: NHH-X-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	1.00		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	7.90		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	91.1		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-03

Client ID: NHH-X-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 09:22

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.200		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	15.1		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	55.0		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	29.7		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-04

Client ID: NHH-Y-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 10:37

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.500		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.900		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	2.00		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	6.30		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	90.3		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-05
Client ID: NHH-Y-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 10:37
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	2.60		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	15.2		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	74.3		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	7.90		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-06
Client ID: NHH-Z-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	0.900		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	4.50		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	94.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-07
Client ID: NHH-Z-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.100		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	1.10		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	18.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	80.2		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-08

Client ID: NHH-N-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 13:05

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	2.40		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	2.60		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	12.0		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	11.2		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	71.8		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-09
Client ID: NHH-N-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 13:05
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.200		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	2.60		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	78.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	18.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-10

Client ID: NHH-O-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 14:45

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.300		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	1.20		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	2.90		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	95.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-11
Client ID: NHH-O-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 14:45
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	0.700		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	76.9		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	22.4		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-12

Client ID: NHH-M

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 16:10

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	0.300		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	1.50		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	98.2		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-13
Client ID: NHH-T-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	1.40		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	98.6		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727561

Report Date: 12/13/17

SAMPLE RESULTS

Lab ID: L1727561-14

Client ID: NHH-T-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 17:34

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Coarse Sand	0.100		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Medium Sand	1.00		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Fine Sand	1.20		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP
% Total Fines	97.7		%	0.100	NA	1	-	08/09/17 11:36	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1727561
Report Date: 12/13/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1030340-1 QC Sample: L1727561-08 Client ID: NHH-N-TOP						
% Total Gravel	2.40	ND	%	NC		25
% Coarse Sand	2.60	3.70	%	35	Q	25
% Medium Sand	12.0	14.7	%	20		25
% Fine Sand	11.2	14.3	%	24		25
% Total Fines	71.8	67.3	%	6		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:12131710:53
Lab Number: L1727561
Report Date: 12/13/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727561-01A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-02A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-03A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-04A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-05A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-06A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-07A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-08A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-08A1	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 12131710:53
Lab Number: L1727561
Report Date: 12/13/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727561-08A2	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-09A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-10A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-11A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-12A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-13A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727561-14A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727561
Report Date: 12/13/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
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REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

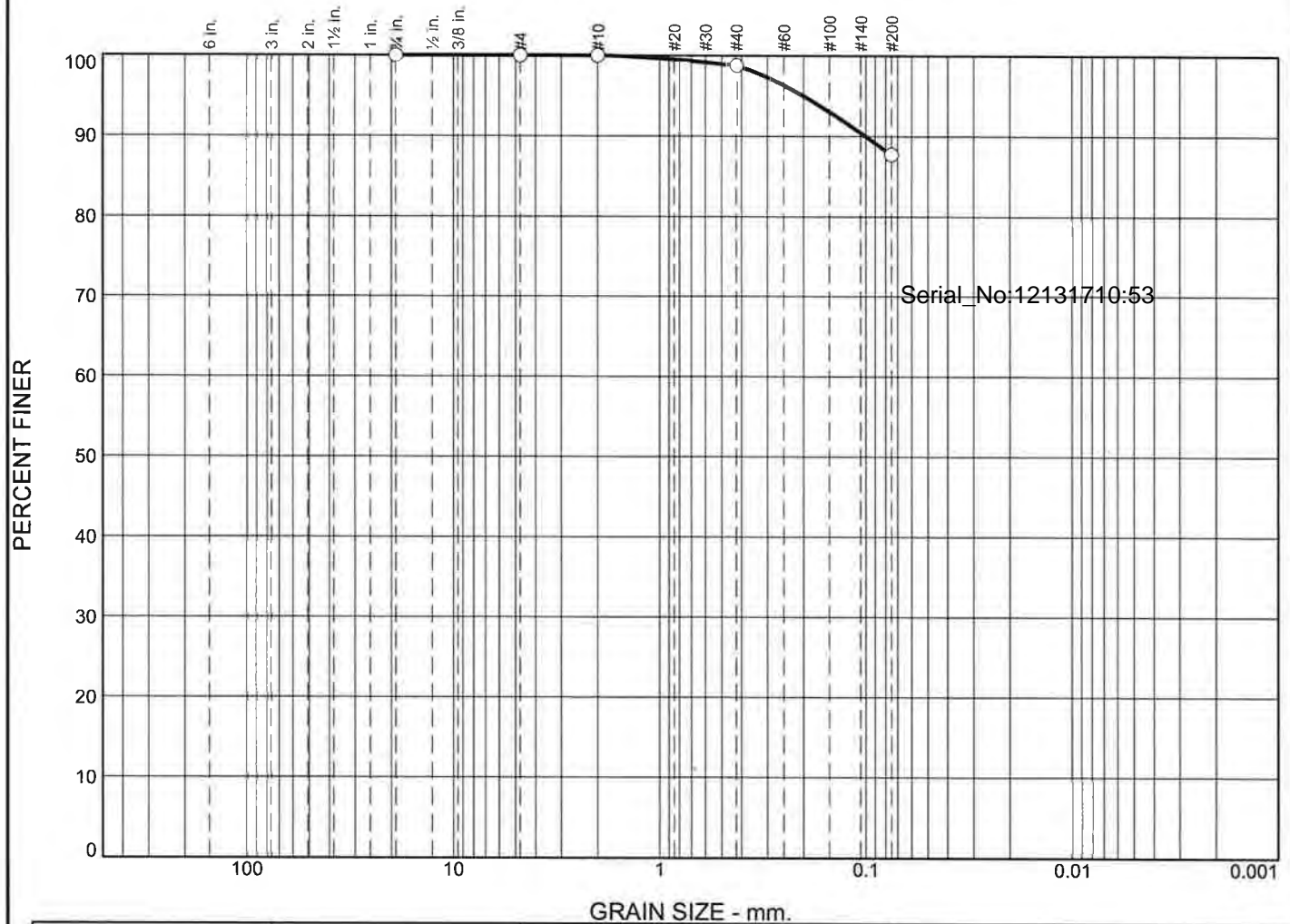
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand				% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0		0.0	0.0	0.0	1.2	11.0	87.8			
×	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description									USCS	AASHTO
○										

Project No. Project: ○ Source of Sample: NHH-X-TOP Sample Number: L1727561-01 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-X-TOP

Sample Number: L1727561-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.88

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.88	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.22	0.00	98.8
		#200	1.97	0.00	87.8

Serial_No:12131710:53

Fractional Components

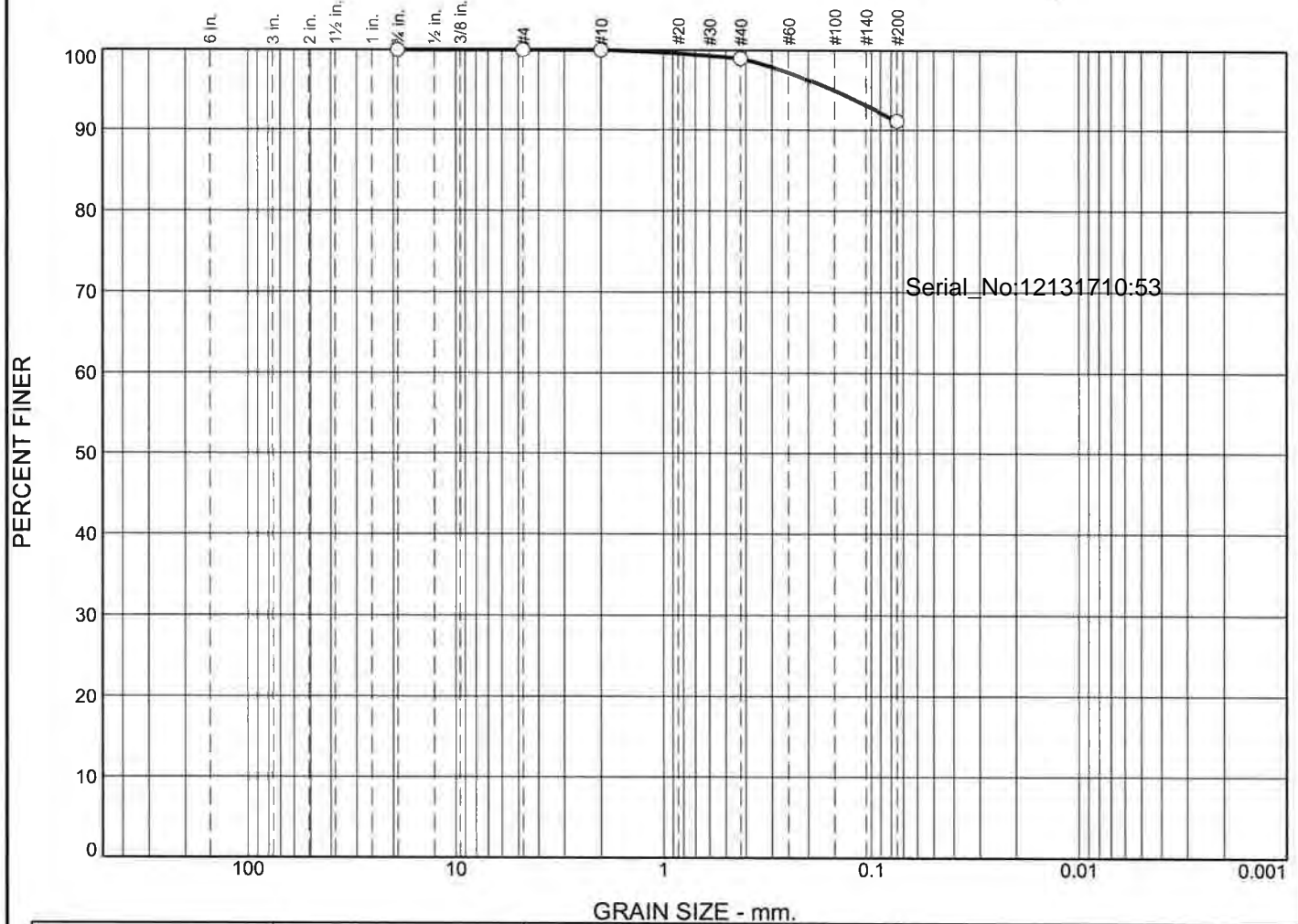
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.2	11.0	12.2			87.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.1000	0.2002

Fineness Modulus
0.11

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand				% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0		0.0	0.0	0.0	1.0	7.9	91.1			
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description	USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-X-REP-TOP Sample Number: L1727561-02 Date: <input type="radio"/> <div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	Remarks: <div style="text-align: right;"> Figure </div>
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-X-REP-TOP

Sample Number: L1727561-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.41
Tare Wt. = 0.00
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
15.41	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.16	0.00	99.0
		#200	1.21	0.00	91.1

Serial_No:12131710:53

Fractional Components

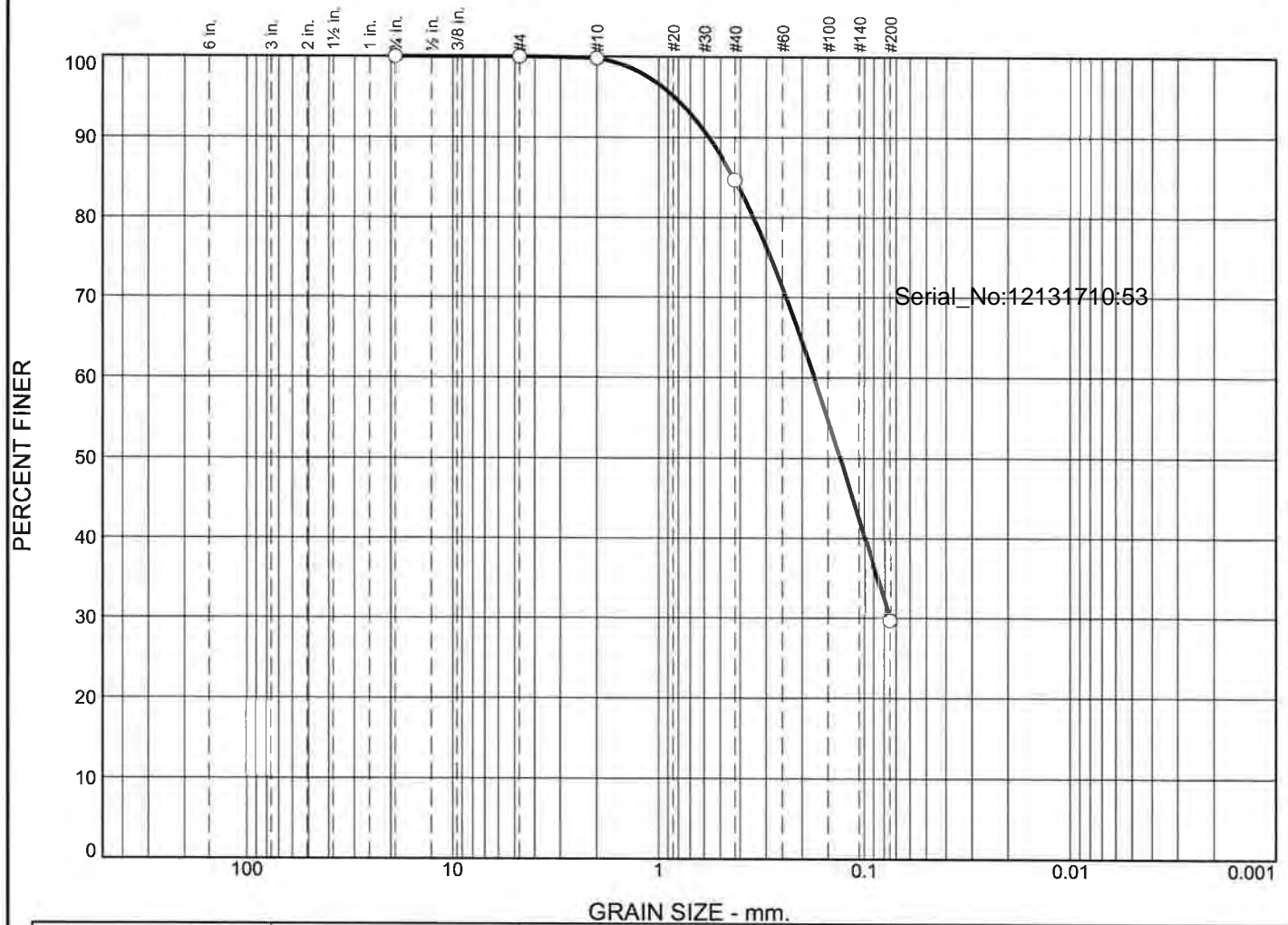
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.0	7.9	8.9			91.1

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
									0.1544

Fineness Modulus
0.08

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
○	0.0		0.0	0.0	0.2	15.1	55.0	29.7				
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.4316	0.1749	0.1307	0.0756					
Material Description									USCS		AASHTO	
○												

Project No.

Client:

Project:

Source of Sample: NHH-X-BOTTOM

Sample Number: L1727561-03

Date: ○

Alpha Analytical

Mansfield, MA

Remarks:

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-X-BOTTOM

Sample Number: L1727561-03

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.46

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
34.46	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.06	0.00	99.8
		#40	5.22	0.00	84.7
		#200	18.94	0.00	29.7

Serial_No:12131710:53

Fractional Components

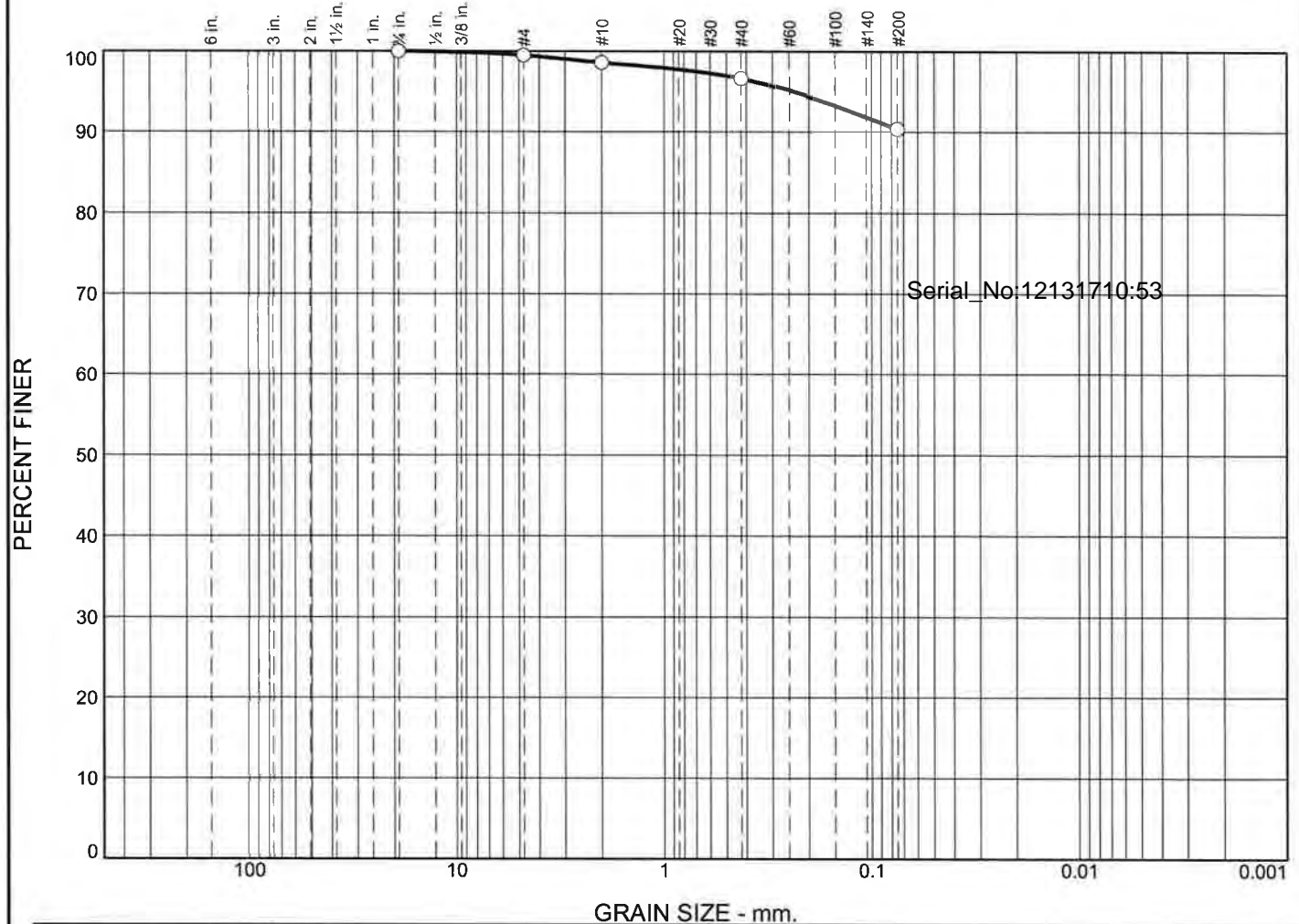
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	15.1	55.0	70.3			29.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0756	0.1307	0.1749	0.3461	0.4316	0.5678	0.8349

Fineness Modulus
0.80

Alpha Analytical

Particle Size Distribution Report



	% +3"		% Gravel		% Sand				% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	0.5	0.9	2.0	6.3	90.3				
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○												

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-Y-TOP Sample Number: L1727561-04 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-Y-TOP

Sample Number: L1727561-04

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.59
Tare Wt. = 0.00
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
15.59	0.00	0.75	0.00	0.00	100.0
		#4	0.08	0.00	99.5
		#10	0.14	0.00	98.6
		#40	0.31	0.00	96.6
		#200	0.98	0.00	90.3

Serial_No:12131710:53

Fractional Components

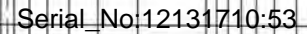
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	0.9	2.0	6.3	9.2			90.3

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
									0.2435

Fineness Modulus
0.18

Alpha Analytical

PERCENT FINER



Material Description	USCS	AASHTO
<div data-bbox="181 1533 209 1535" style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">○</div>		

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: NHH-Y-BOTTOM	Sample Number: L1727561-05	
Date: <input type="radio"/>		
Alpha Analytical		Figure
Mansfield, MA		

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-Y-BOTTOM

Sample Number: L1727561-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.48
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
36.48	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.95	0.00	97.4
		#40	5.54	0.00	82.2
		#200	27.10	0.00	7.9

Serial_No:12131710:53

Fractional Components

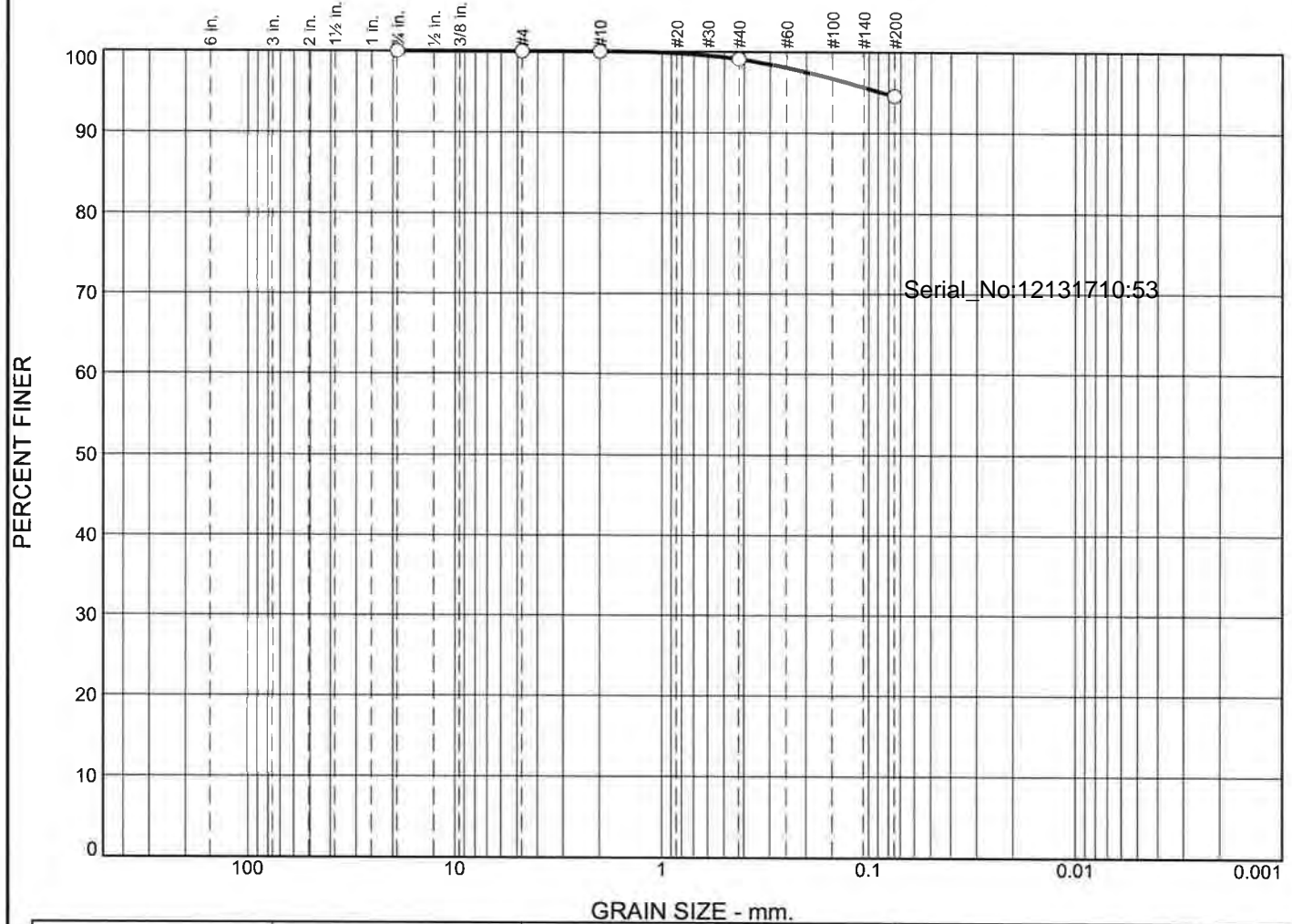
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.6	15.2	74.3	92.1			7.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0781	0.0860	0.0948	0.1155	0.1753	0.2206	0.3908	0.4791	0.6334	1.0568

Fineness Modulus	C _u	C _c
1.03	2.83	0.77

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand				% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0		0.0	0.0	0.0	0.9	4.5	94.6			
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-Z-TOP Sample Number: L1727561-06 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-Z-TOP

Sample Number: L1727561-06

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.43
Tare Wt. = 0.00
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
15.43	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.14	0.00	99.1
		#200	0.70	0.00	94.6

Serial_No:12131710:53

Fractional Components

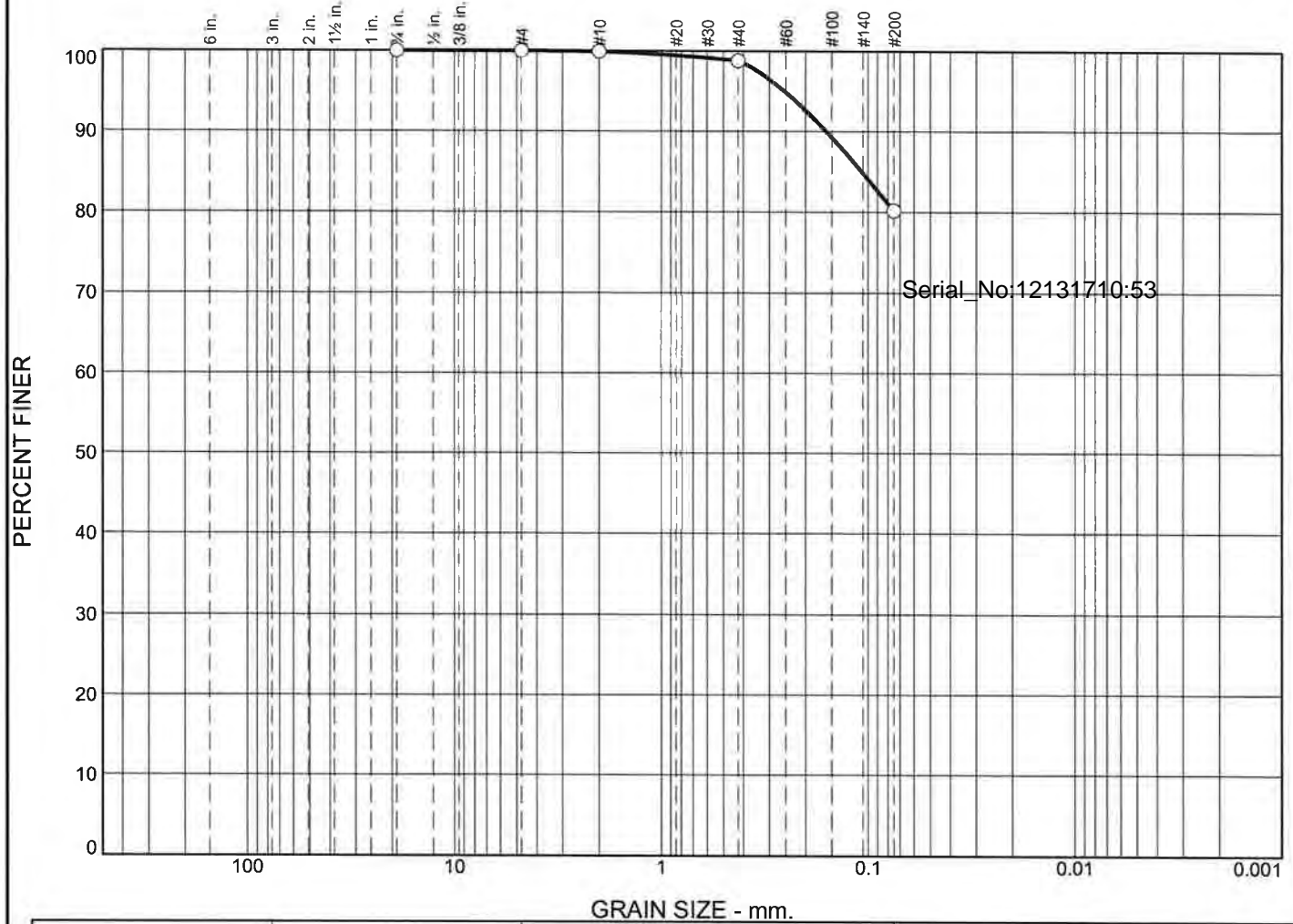
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.9	4.5	5.4			94.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.0864

Fineness Modulus
0.05

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand				% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0		0.0	0.0	0.1	1.1	18.6	80.2			
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.1074							

Material Description								USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-Z-BOTTOM Sample Number: L1727561-07 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: <div>Figure</div>

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Sample Number: L1727561-07

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.03

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.03	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.02	0.00	99.9
		#40	0.23	0.00	98.8
		#200	3.92	0.00	80.2

Serial_No:12131710:53

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.1	18.6	19.8			80.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.1074	0.1594	0.2535

Fineness
Modulus

0.16

Grain size distribution curve for Serial No: 12131710:53. The graph plots Percent Finer (0-100) against Grain Size in mm (log scale, 100 to 0.001). The curve shows a material that is 100% finer than 4.75 mm and 72% finer than 0.075 mm.

Grain Size (mm)	Percent Finer (%)
60	100
4.75	100
2.5	98
1.18	95
0.85	90
0.425	83
0.25	78
0.075	72

Project No. Client: Project: ○ Source of Sample: NHH-N-TOP Sample Number: L1727561-08 Date: ○	Remarks:
<div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-N-TOP

Sample Number: L1727561-08

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.78
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.78	0.00	0.75	0.00	0.00	100.0
		#4	0.47	0.00	97.6
		#10	0.52	0.00	95.0
		#40	2.37	0.00	83.0
		#200	2.22	0.00	71.8

Serial_No:12131710:53

Fractional Components

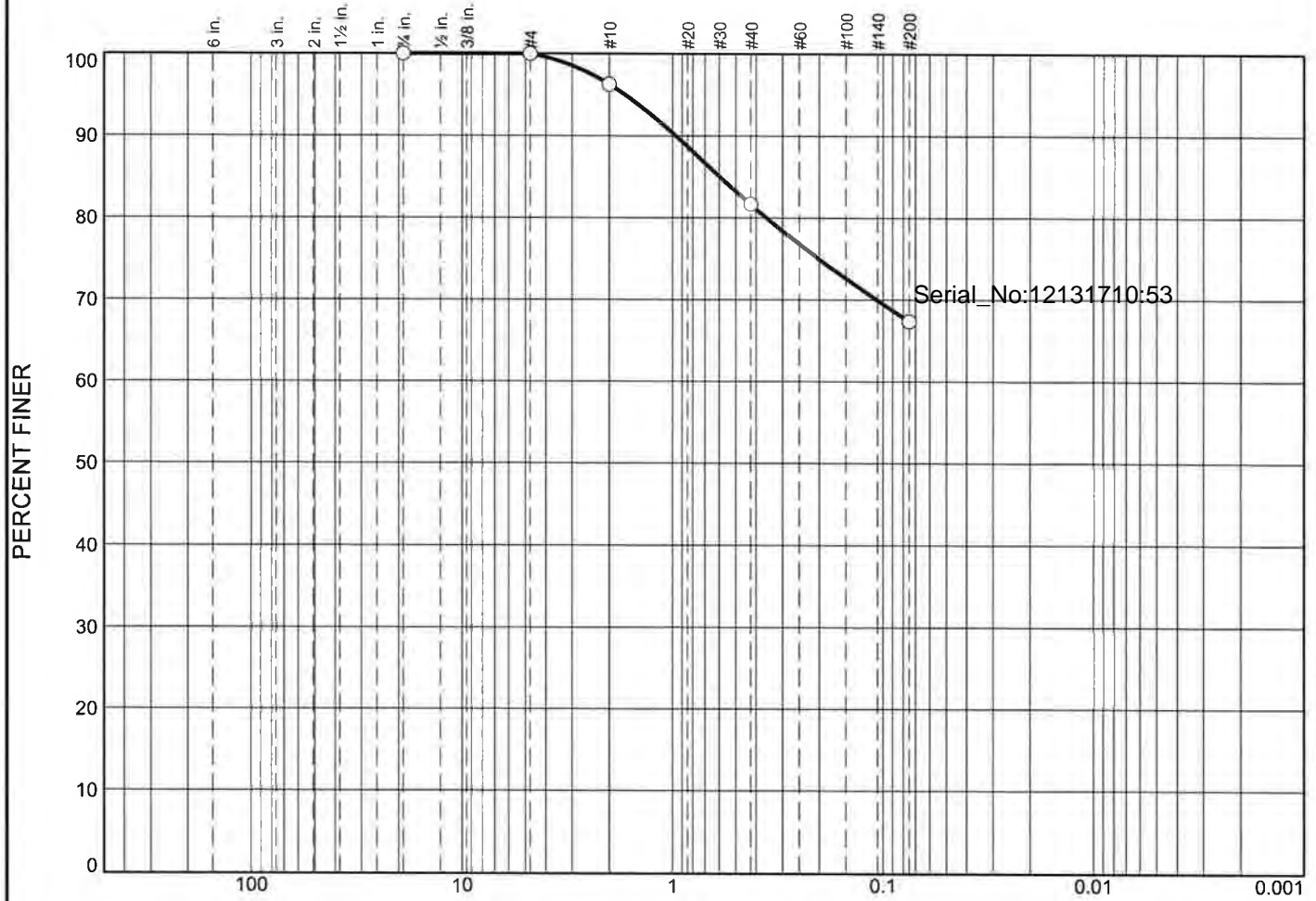
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.4	2.4	2.6	12.0	11.2	25.8			71.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.2850	0.5398	0.9688	2.0020

Fineness Modulus
0.74

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	3.7	14.7	14.3	67.3				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
				0.5930						

Material Description	USCS	AASHTO

Project No.	Client:
Project:	
Source of Sample: NHH-N-TOP	Sample Number: WG1030340-1
Date:	
Alpha Analytical	
Mansfield, MA	

Remarks:
Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-N-TOP

Sample Number: WG1030340-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.91
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.91	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.89	0.00	96.3
		#40	3.50	0.00	81.6
		#200	3.42	0.00	67.3

Serial_No:12131710:53

Fractional Components

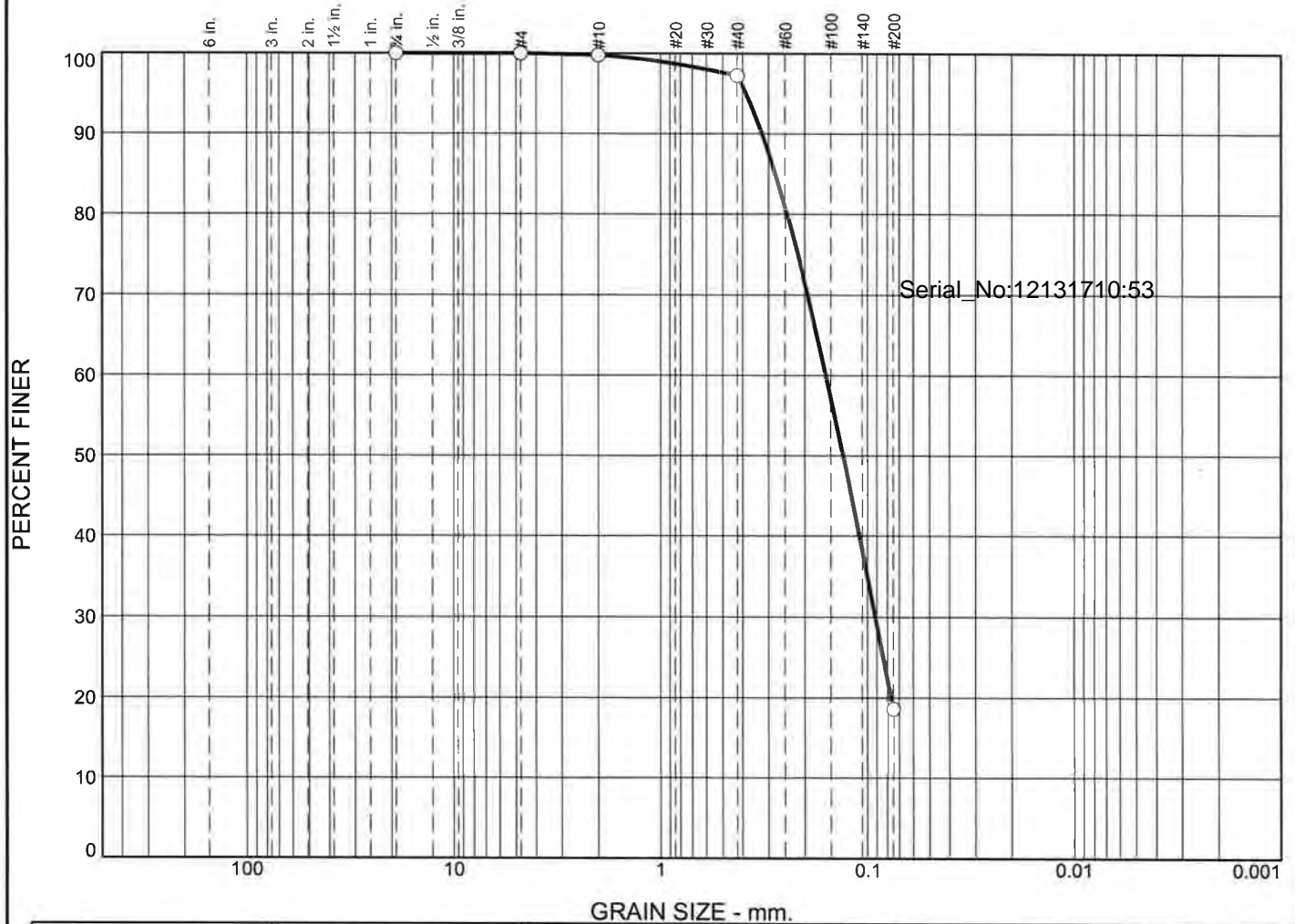
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.7	14.7	14.3	32.7			67.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.3579	0.5930	0.9663	1.6803

Fineness Modulus
0.75

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"			% Gravel		% Sand			% Fines				
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	0.0	0.2	2.6	78.6	18.6				
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.2784	0.1583	0.1308	0.0915					

Material Description							USCS	AASHTO

Project No.	Client:
Project:	
Source of Sample: NHH-N-BOTTOM	Sample Number: L1727561-09
Date:	
Alpha Analytical	
Mansfield, MA	

Remarks:
Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-N-BOTTOM

Sample Number: L1727561-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.32

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
36.32	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.08	0.00	99.8
		#40	0.93	0.00	97.2
		#200	28.56	0.00	18.6

Serial_No:12131710:53

Fractional Components

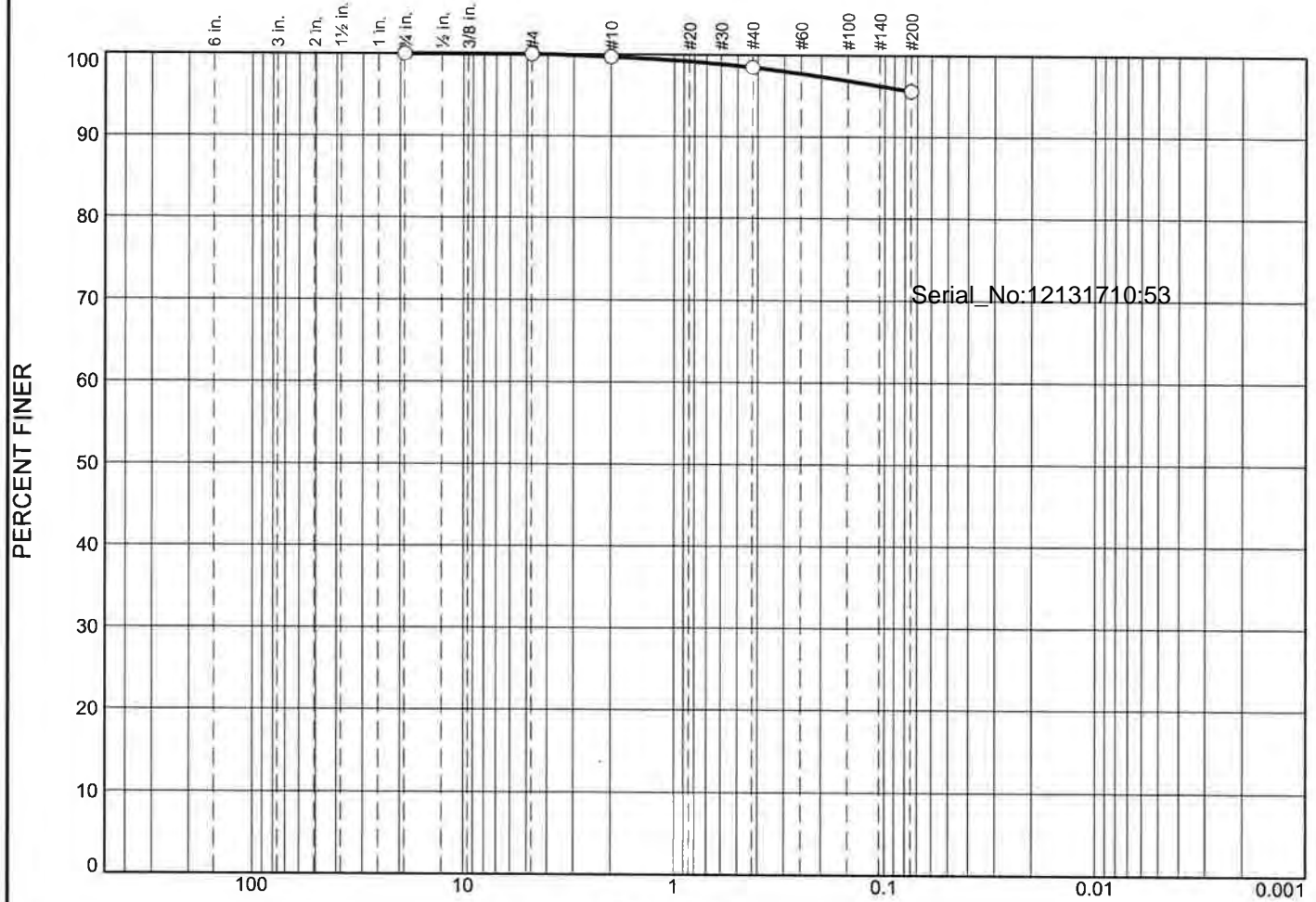
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	2.6	78.6	81.4			18.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0769	0.0915	0.1308	0.1583	0.2445	0.2784	0.3225	0.3853

Fineness Modulus
0.58

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	0.3	1.2	2.9	95.6				
<input checked="" type="checkbox"/> Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u

Material Description							USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-O-TOP Sample Number: L1727561-10 Date: <input type="radio"/> <div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	Remarks: <div style="text-align: right;"> Figure </div>
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-O-TOP

Sample Number: L1727561-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.14
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.14	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	99.7
		#40	0.21	0.00	98.5
		#200	0.49	0.00	95.6

Serial_No:12131710:53

Fractional Components

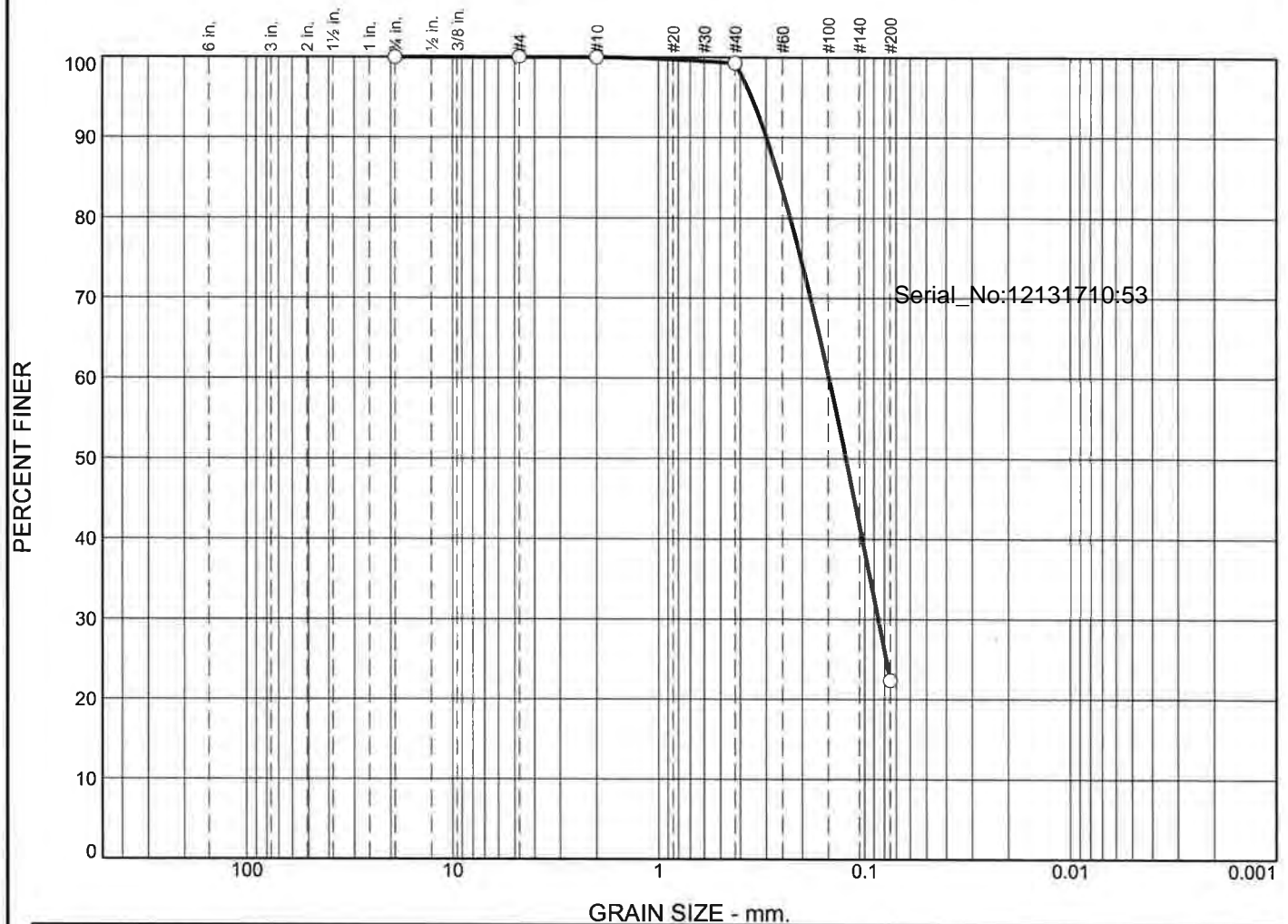
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	1.2	2.9	4.4			95.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.07

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	0.0	0.7	76.9	22.4				
Colloids	LL	PL	D85	D60	D50	D30	D15	D10	C _c	C _u
			0.2594	0.1487	0.1229	0.0857				

Material Description	USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-O-BOTTOM Sample Number: L1727561-11 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-O-BOTTOM

Sample Number: L1727561-11

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.67
Tare Wt. = 0.00
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
36.67	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.26	0.00	99.3
		#200	28.19	0.00	22.4

Serial_No:12131710:53

Fractional Components

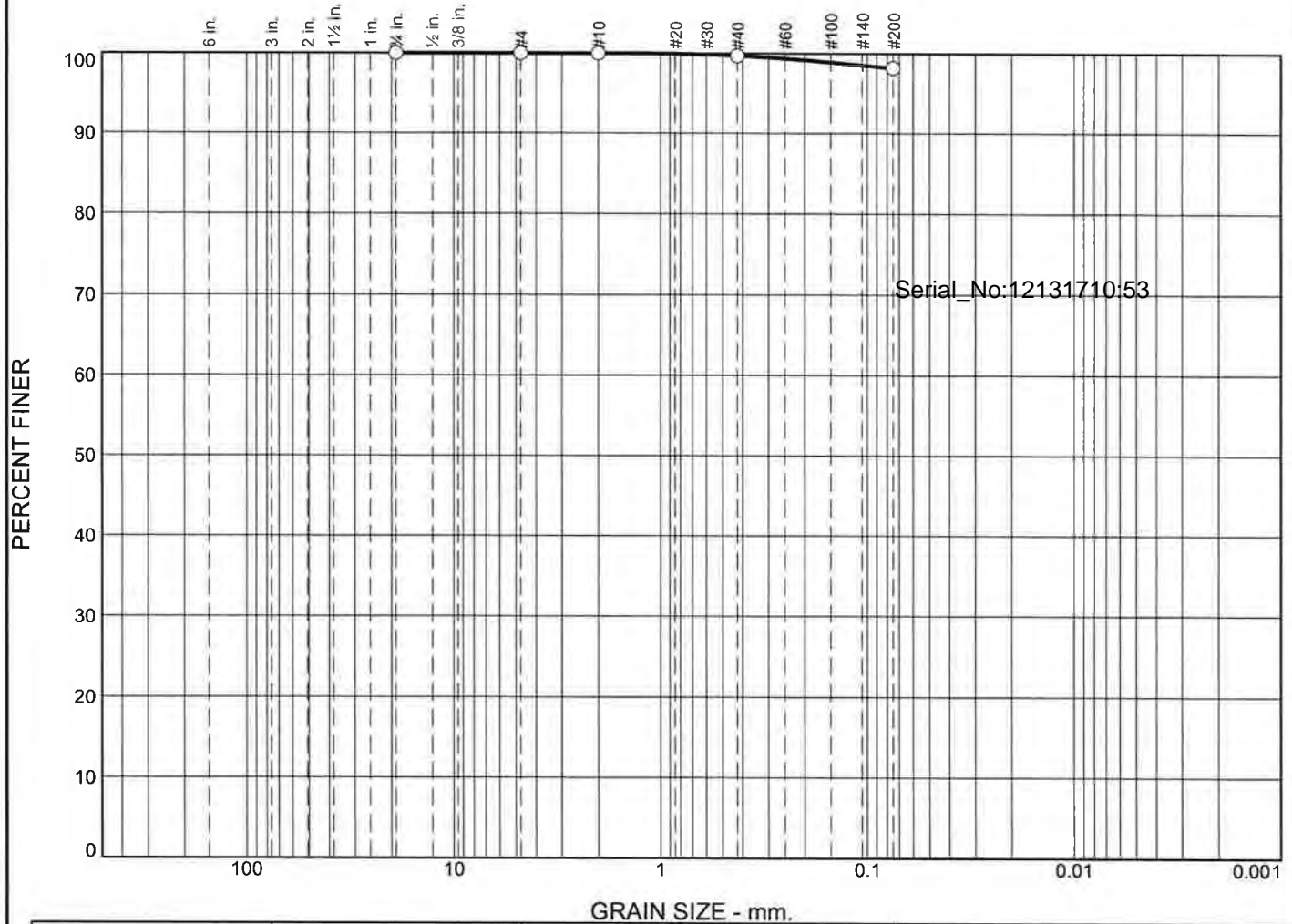
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	76.9	77.6			22.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0857	0.1229	0.1487	0.2286	0.2594	0.2988	0.3531

Fineness Modulus
0.50

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"			% Gravel			% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	0.0	0.0	0.3	1.5	98.2				
<input type="radio"/>												
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>												
<input type="radio"/>												

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-M Sample Number: L1727561-12 Date: <input type="radio"/> <div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	Remarks: <div style="text-align: right;"> Figure </div>
---	--

GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-M

Sample Number: L1727561-12

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.58

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.58	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.05	0.00	99.7
		#200	0.27	0.00	98.2

Serial_No:12131710:53

Fractional Components

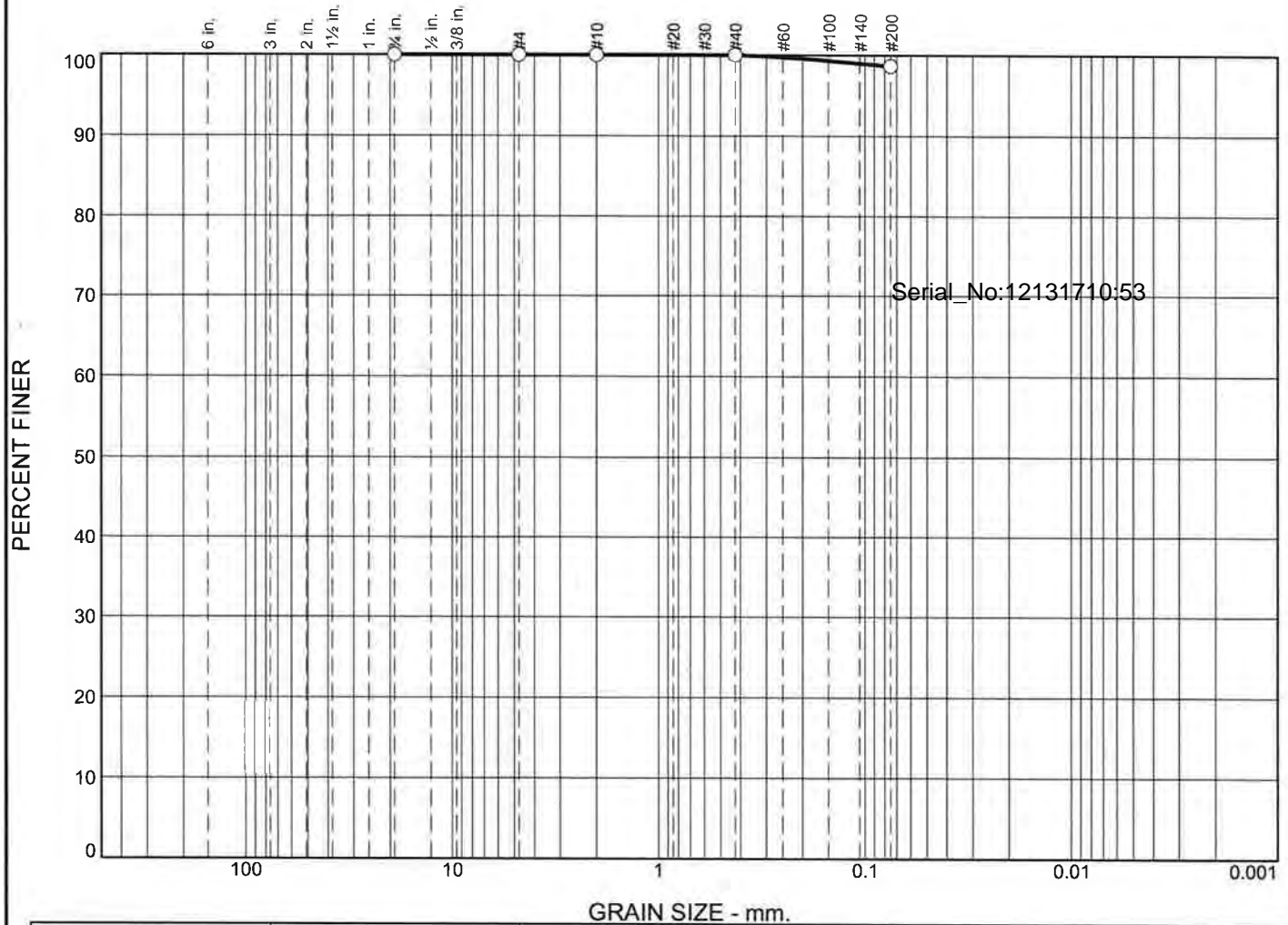
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	1.5	1.8			98.2

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95

Fineness Modulus
0.02

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/> 0.0	0.0	0.0	0.0	0.0	1.4	98.6				
<input checked="" type="checkbox"/> Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										
<input type="radio"/>										

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-T-TOP Sample Number: L1727561-13 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-T-TOP

Sample Number: L1727561-13

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.97

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
16.97	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.00	0.00	100.0
		#200	0.23	0.00	98.6

Serial_No:12131710:53

Fractional Components

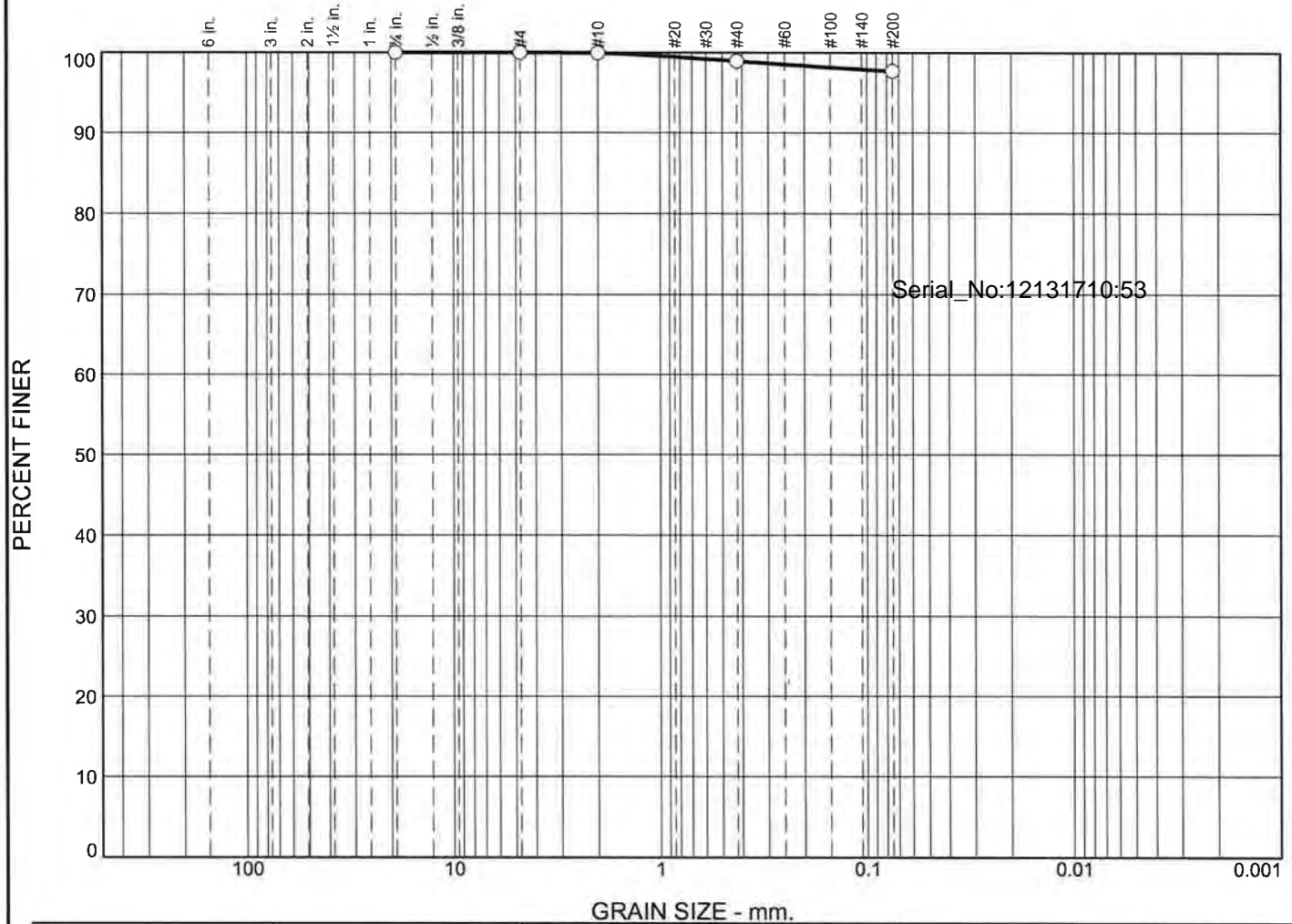
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4			98.6

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95

Fineness Modulus
0.01

Alpha Analytical

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	0.0	0.1	1.0	1.2	97.7			
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description								USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-T-BOTTOM Sample Number: L1727561-14 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/9/2017

Location: NHH-T-BOTTOM

Sample Number: L1727561-14

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.91
Tare Wt. = 0.00
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
16.91	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.01	0.00	99.9
		#40	0.17	0.00	98.9
		#200	0.21	0.00	97.7

Serial_No:12131710:53

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.0	1.2	2.3			97.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.04

Alpha Analytical

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	NA
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	NA
22. Were the test-specific age requirements met for each test species?	NA
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	NA
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	NA
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	NA



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% Coarse sand (35%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

Page 1 of 2

Client/Project Name: USACE / NHH FMP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number: 60543021			Field Logbook No.:			GRAN SIZE - SIEVE METALS - 6004 / 7474-7475 PCBs - 8082 / 8270 SIM PESTICIDES - 80813 PAHs - 8270 D SIM TUC - 9060										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product		
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													Lab I.D.		Remarks		
Signature: 			Send Results/Report to: MARY O'CONNELL KOZIK													TAT: GS-241A CHEM - STD				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHH-X-TOP	8/8/17	0922	X		802/1602	SD	4°C	NA	X	X	X	X	X	X	X		0-4'9"			
NHH-X-REAR-TOP	8/8/17	0922	X			SD			X	X	X	X	X	X	X		REPLICATE - 0.49"			
NHH-X-BOTTOM	8/8/17	0922	X			SD			X	X	X	X	X	X	X		4'9" - 8.0'			
NHH-Y-TOP	8/8/17	1037	X			SD			X	X	X	X	X	X	X		0-5'11"			
NHH-Y-BOTTOM	8/8/17	1037	X		802	SD			X								5'11" - 8'6"			
NHH-Z-TOP	8/8/17	1153	X		802/1602	SD			X	X	X	X	X	X	X		0-5.0'			
NHH-Z-BOTTOM	8/8/17	1153	X			SD			X	X	X	X	X	X	X		5.0' - 8'8"			
NHH-N-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0'			
NHH-N-MS-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0' MS			
NHH-N-MSD-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0' MSD			
NHH-N-BOTTOM	8/8/17	1305	X		802	SD			X								6.0' - 7'6"			
NHH-O-TOP	8/8/17	1445	X		802/1602	SD			X	X	X	X	X	X	X		0-8' 3" 4"			
NHH-O-BOTTOM	8/8/17	1445	X		802	SD			X								8'8" - 10'10"			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY - AECOM			Date: 8/8/17 Time: 1847			Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 1847			Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOWDOEN, MA								
Signature:			Date: 8/8/17 Time: 2138			Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 2138											
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:			Signature:			Time:			Sample Shipped Via: UPS FedEx Courier Other								
												Temp blank Yes No								

AECOM**CHAIN OF CUSTODY RECORD**Page 2 of 2

Client/Project Name: USACE / NHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H ₂ SO ₄ , 4° 3 - HNO ₃ , 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na ₂ S ₂ O ₃ , 4° 7 - 4°	
Project Number: 60543021			Field Logbook No.:			GRAV SIEVE - SIEVE METALS - 6020A / 7474-747B PUBS - 8082 / 8270511 PESTICIDES - 8081B PAHS - 8270 DS11 TOL - 5060										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													Send Results/Report to: MARY J CONNELL VOZIC		TAT: GS 2TAT CHEM - 3ID		Lab I.D.		Remarks
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											
NHH-M	8/8/17	1610	X		807/1602	SD	4°C	MA	X	X	X	X	X	X			0-6'9"		
NHH-T-TOP	8/8/17	1734	X		807/1607	SD	↓	↓	X	X	X	X	X	X			0-4'10"		
NHH-T-BOTTOM	8/8/17	1734	X		↓	SD	↓	↓	X	X	X	X	X	X			4'10" - 16'4"		
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM			Date: 8/8/17 Time: 1847		Received by: (Print Name)/(Affiliation) John H. [Signature]			Date: 8/8/17 Time: 1847		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WEST BOROUGH, MA									
Signature: [Signature]					Signature: [Signature]														
Relinquished by: (Print Name)/(Affiliation) [Signature]			Date: 8/8/17 Time: 2138		Received by: (Print Name)/(Affiliation) [Signature]			Date: 8/8/17 Time: 2138		Sample Shipped Via: UPS FedEx Courier Other									
Signature: [Signature]					Signature: [Signature]													Temp blank Yes No	
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:		Signature:			Time:											



ANALYTICAL REPORT

Lab Number:	L1727787
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE-NHH FNP
Project Number:	60543021
Report Date:	08/10/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1727787-01	NHH-U-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1727787-02	NHH-U-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1727787-03	NHH-P-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/09/17
L1727787-04	NHH-P-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/09/17
L1727787-05	NHH-Q-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1727787-06	NHH-Q-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1727787-07	NHH-W-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 16:34	08/09/17
L1727787-08	NHH-W-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 16:34	08/09/17
L1727787-09	NHH-V-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17
L1727787-10	NHH-V-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1030761-1 Laboratory Duplicate RPD for % Coarse sand (172%), % Medium sand (67%), performed on L1727787-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 08/10/17

INORGANICS & MISCELLANEOUS

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-01
Client ID: NHH-U-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	0.300		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	2.50		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	2.50		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	94.7		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-02
Client ID: NHH-U-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.300		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	4.00		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	5.90		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	5.50		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	84.3		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-03
Client ID: NHH-P-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.400		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	2.90		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	2.10		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	4.20		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	90.4		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-04
Client ID: NHH-P-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	3.80		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	3.30		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	1.70		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	91.2		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-05
Client ID: NHH-Q-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	0.700		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	1.30		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	1.40		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	96.6		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-06
Client ID: NHH-Q-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.900		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	3.90		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	3.10		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	2.60		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	89.5		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-07
Client ID: NHH-W-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	0.500		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	5.30		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	36.7		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	57.5		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-08
Client ID: NHH-W-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	0.100		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	63.2		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	36.7		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-09
Client ID: NHH-V-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	3.10		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	2.50		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	2.00		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	92.4		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

SAMPLE RESULTS

Lab ID: L1727787-10
Client ID: NHH-V-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.300		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Coarse Sand	3.40		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Medium Sand	5.00		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Fine Sand	3.30		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP
% Total Fines	88.0		%	0.100	NA	1	-	08/10/17 12:51	12,D6913/D7928	SP



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1727787
Report Date: 08/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1030761-1 QC Sample: L1727787-01 Client ID: NHH-U-TOP						
% Total Gravel	ND	ND	%	NC		25
% Coarse Sand	0.300	4.00	%	172	Q	25
% Medium Sand	2.50	5.00	%	67	Q	25
% Fine Sand	2.50	2.60	%	4		25
% Total Fines	94.7	88.4	%	7		25

Project Name: USACE-NHH FNP
Project Number: 60543021

Serial_No:08101716:50
Lab Number: L1727787
Report Date: 08/10/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727787-01A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-02A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-03A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-04A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-05A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-06A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-07A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-08A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1727787-09A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE-NHH FNP
Project Number: 60543021

Serial_No:08101716:50
Lab Number: L1727787
Report Date: 08/10/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727787-10A	Plastic 8oz unpreserved for Grain Size	A	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727787
Report Date: 08/10/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

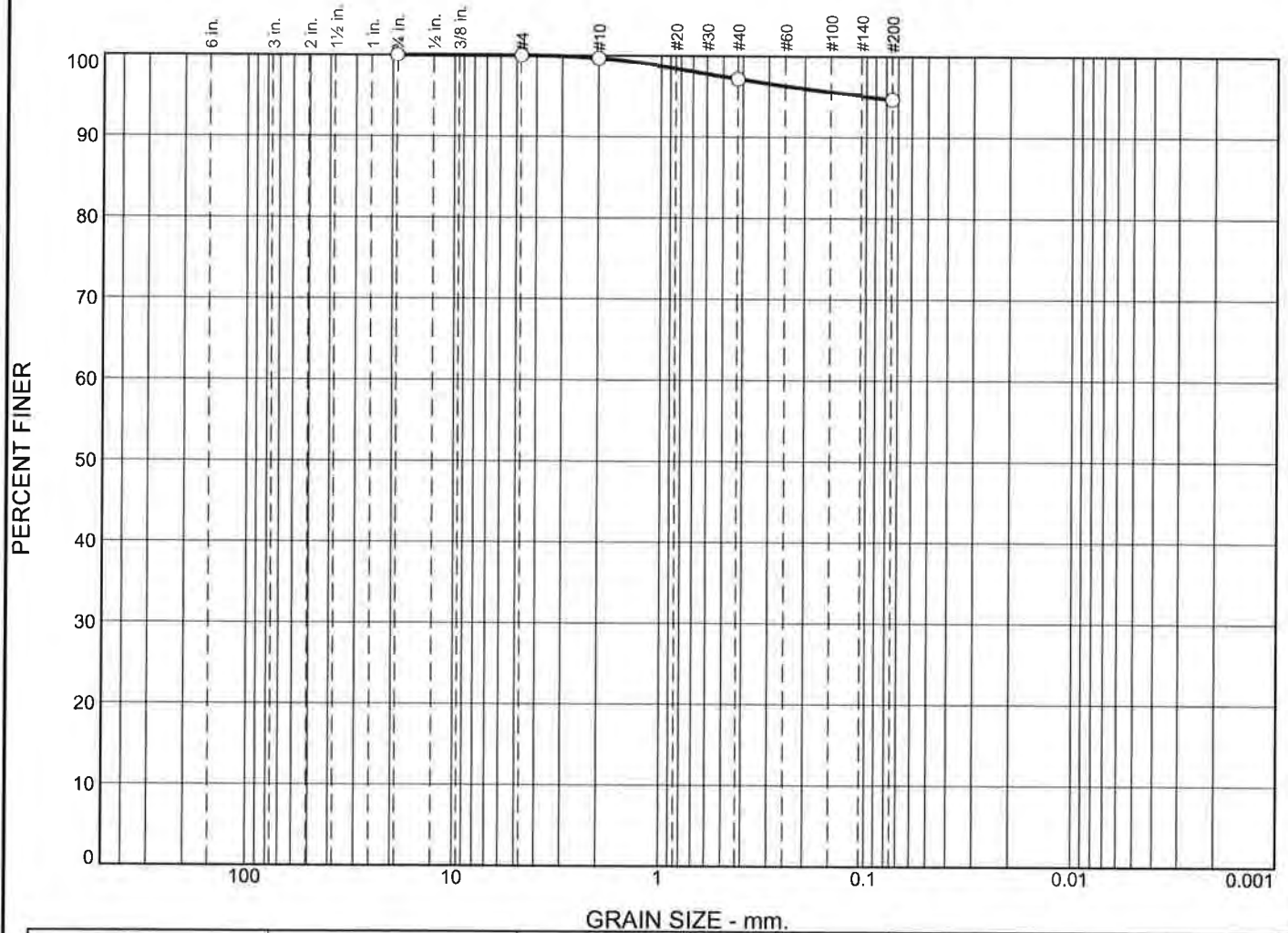
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel			% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	0.0	0.3	2.5	2.5	94.7			
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-U-TOP Sample Number: L1727787-01 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-U-TOP

Sample Number: L1727787-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.39
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.39	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.06	0.00	99.7
		#40	0.43	0.00	97.2
		#200	0.44	0.00	94.7

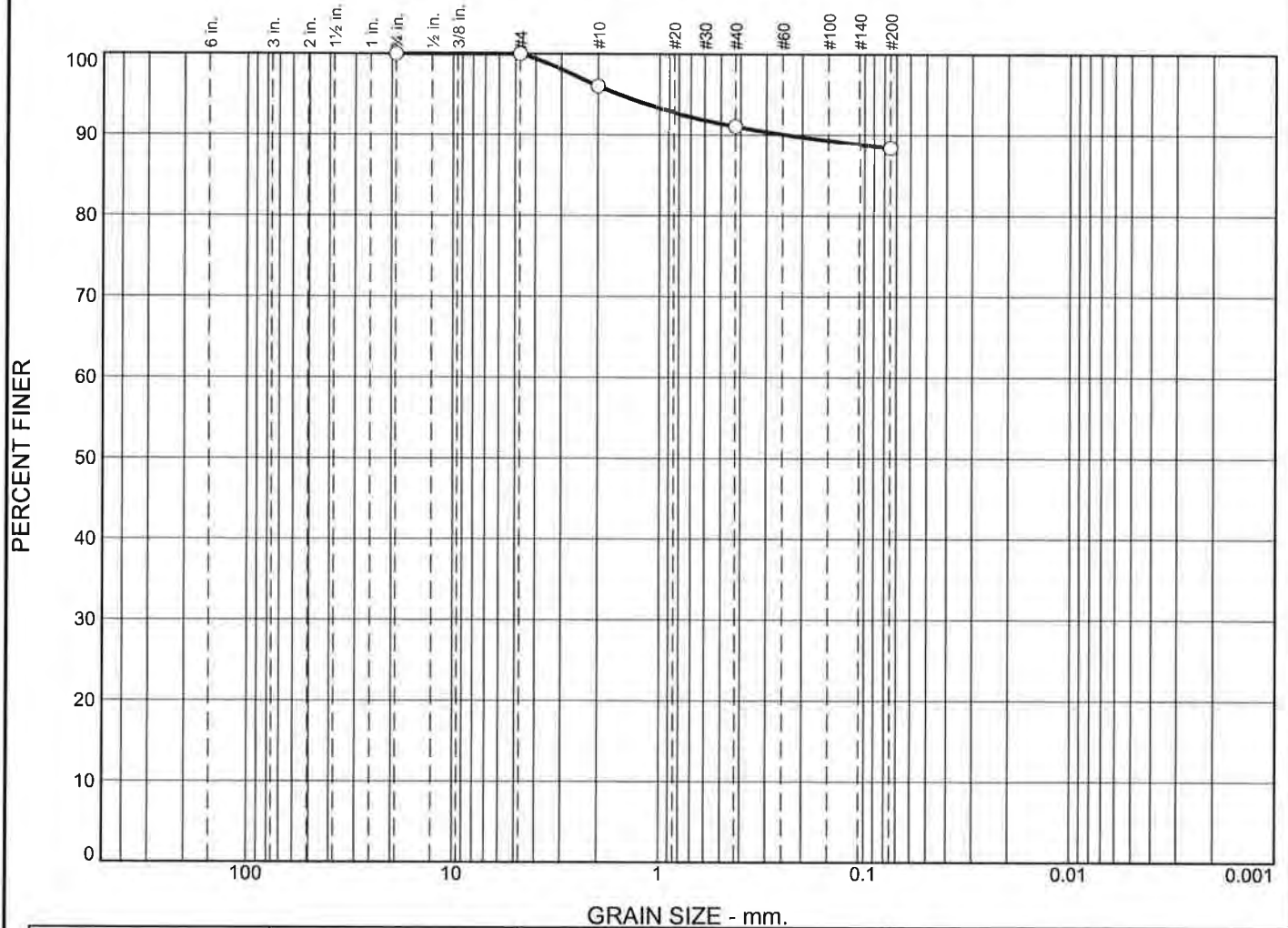
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	2.5	2.5	5.3			94.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.0977

Fineness Modulus
0.11

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	4.0	5.0	2.6	88.4			
<input checked="" type="radio"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>											

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-U-TOP Sample Number: WG1030761-1 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-U-TOP

Sample Number: WG1030761-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.06
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.06	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.68	0.00	96.0
		#40	0.85	0.00	91.0
		#200	0.45	0.00	88.4

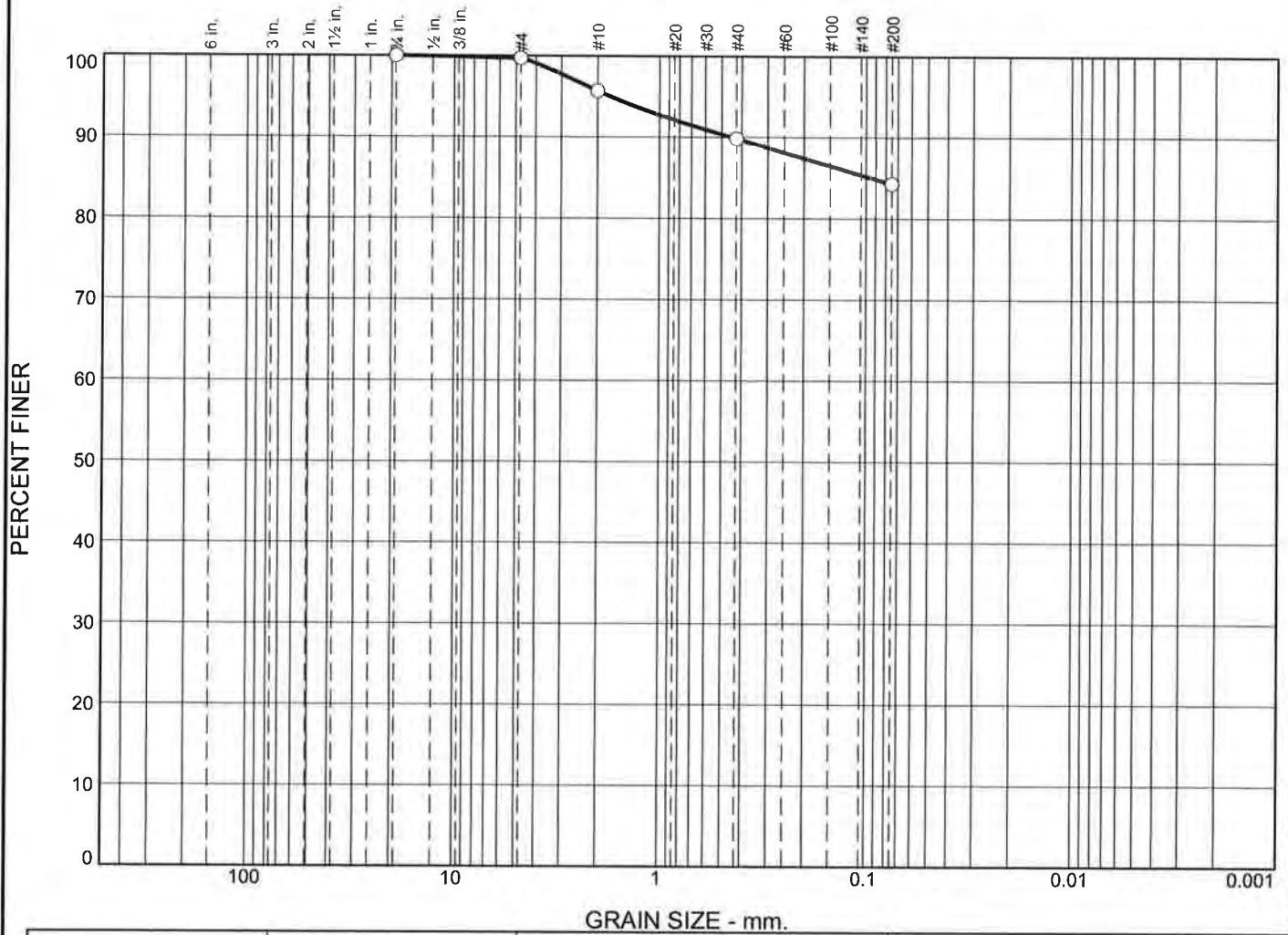
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	4.0	5.0	2.6	11.6			88.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.2415	1.5985

Fineness Modulus
0.38

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.3	4.0	5.9	5.5	84.3				

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			0.0947							

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-U-BOTTOM Sample Number: L1727787-02 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-U-BOTTOM

Sample Number: L1727787-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.94
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.94	0.00	0.75	0.00	0.00	100.0
		#4	0.06	0.00	99.7
		#10	0.80	0.00	95.7
		#40	1.17	0.00	89.8
		#200	1.11	0.00	84.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	4.0	5.9	5.5	15.4			84.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.0947	0.4495	1.7315

Fineness Modulus
0.44

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-P-TOP

Sample Number: L1727787-03

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.42
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.42	0.00	0.75	0.00	0.00	100.0
		#4	0.07	0.00	99.6
		#10	0.57	0.00	96.7
		#40	0.40	0.00	94.6
		#200	0.82	0.00	90.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.4	0.4	2.9	2.1	4.2	9.2			90.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.5998

Fineness Modulus
0.26

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-P-BOTTOM

Sample Number: L1727787-04

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.65
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.65	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.67	0.00	96.2
		#40	0.59	0.00	92.9
		#200	0.29	0.00	91.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.8	3.3	1.7	8.8			91.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									1.4330

Fineness Modulus
0.31

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-Q-TOP

Sample Number: L1727787-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.96
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
16.96	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.12	0.00	99.3
		#40	0.22	0.00	98.0
		#200	0.23	0.00	96.6

Fractional Components

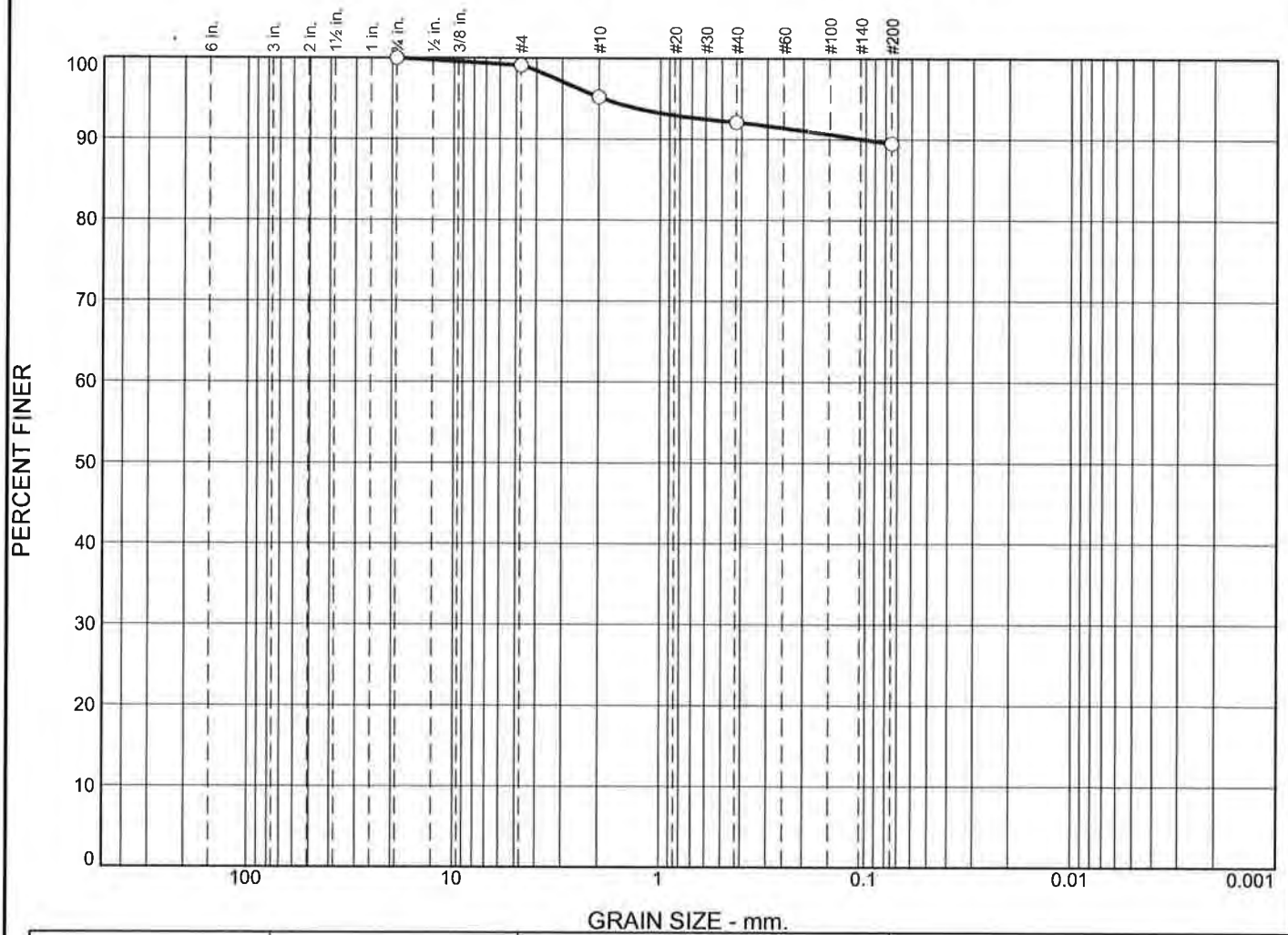
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.7	1.3	1.4	3.4			96.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

**Fineness
Modulus**

0.09

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"	% Gravel		% Sand			% Fines					
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay				
0.0	0.0	0.9	3.9	3.1	2.6	89.5					
Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	

Material Description								USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-Q-BOTTOM Sample Number: L1727787-06 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-Q-BOTTOM

Sample Number: L1727787-06

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.98
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.98	0.00	0.75	0.00	0.00	100.0
		#4	0.18	0.00	99.1
		#10	0.78	0.00	95.2
		#40	0.62	0.00	92.1
		#200	0.52	0.00	89.5

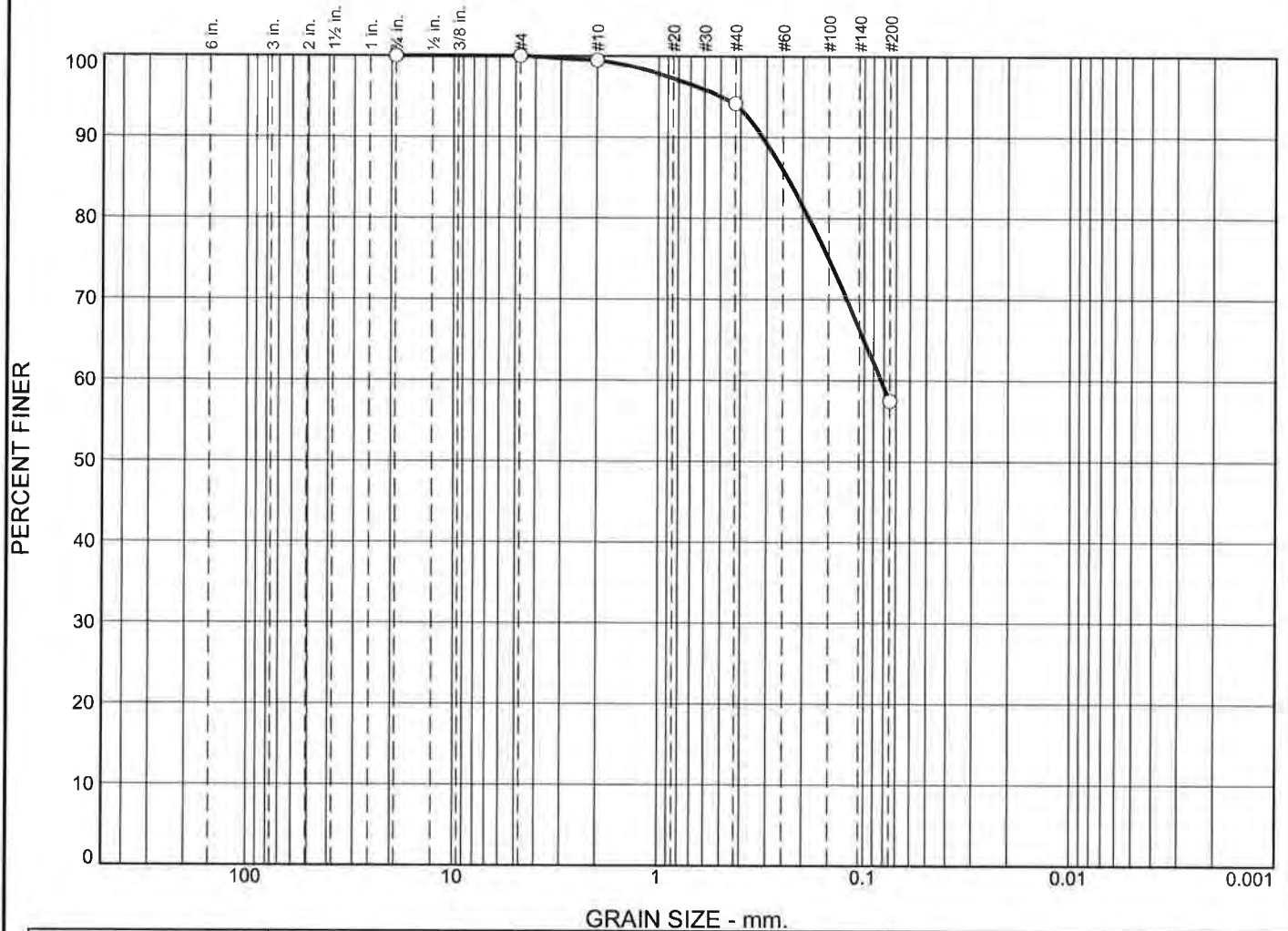
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.9	0.9	3.9	3.1	2.6	9.6			89.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.1020	1.9050

Fineness Modulus
0.37

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
○	0.0		0.0	0.0	0.5	5.3	36.7	57.5				
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.2378	0.0827							

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-W-TOP Sample Number: L1727787-07 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-W-TOP

Sample Number: L1727787-07

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.74
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.74	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.12	0.00	99.5
		#40	1.26	0.00	94.2
		#200	8.72	0.00	57.5

Fractional Components

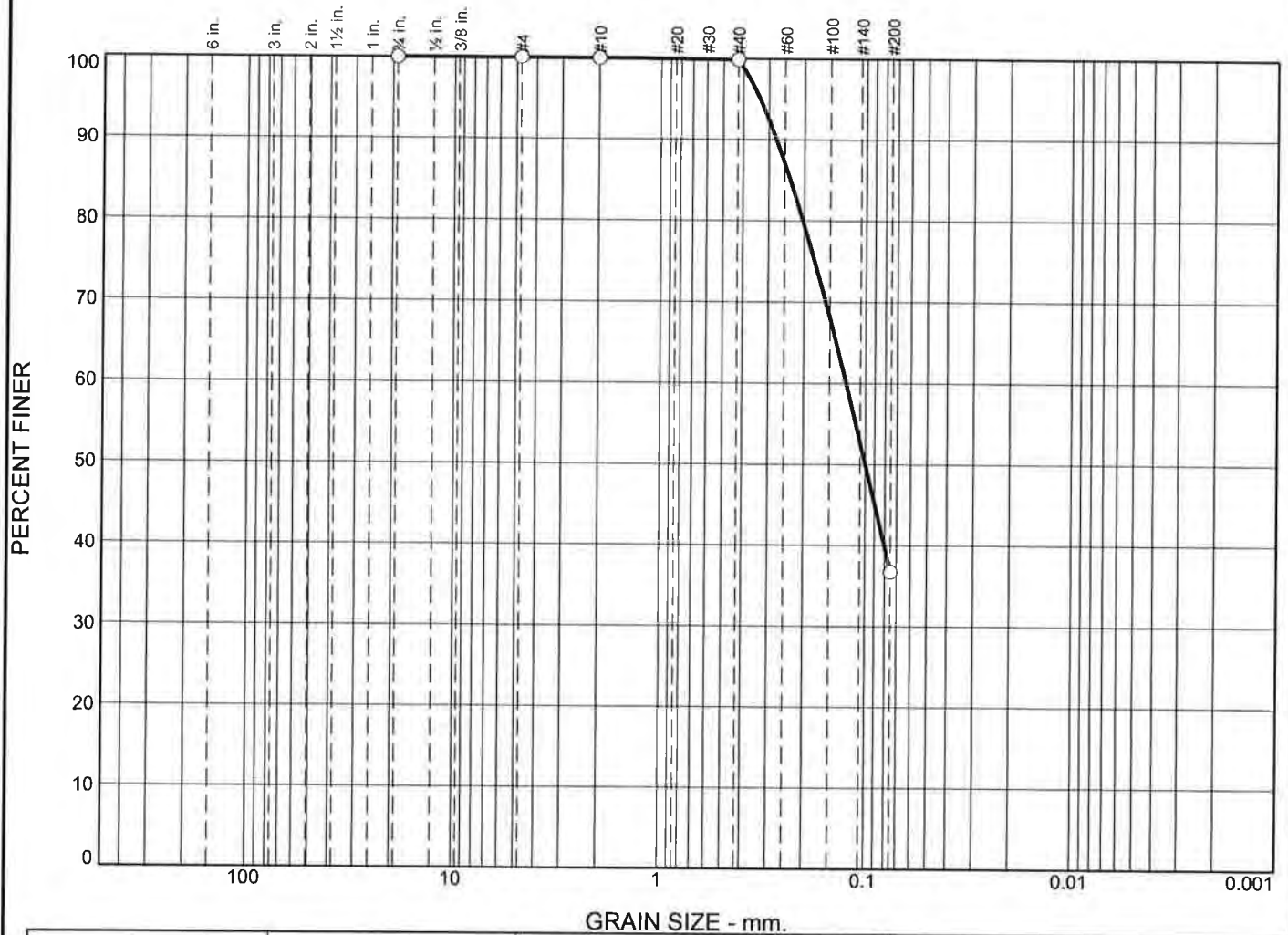
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.5	5.3	36.7	42.5			57.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0827	0.1871	0.2378	0.3144	0.4991

**Fineness
Modulus**

0.42

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	0.0	0.1	63.2	36.7				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.2348	0.1245	0.0998					
Material Description									USCS		AASHTO
<input type="radio"/>											
Project No.		Client:				Remarks:					
Project:											
<input type="radio"/> Source of Sample: NHH-W-BOTTOM		Sample Number: L1727787-08									
Date: <input type="radio"/>		Alpha Analytical				Figure					
		Mansfield, MA									

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-W-BOTTOM

Sample Number: L1727787-08

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.45
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
38.45	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.05	0.00	99.9
		#200	24.28	0.00	36.7

Fractional Components

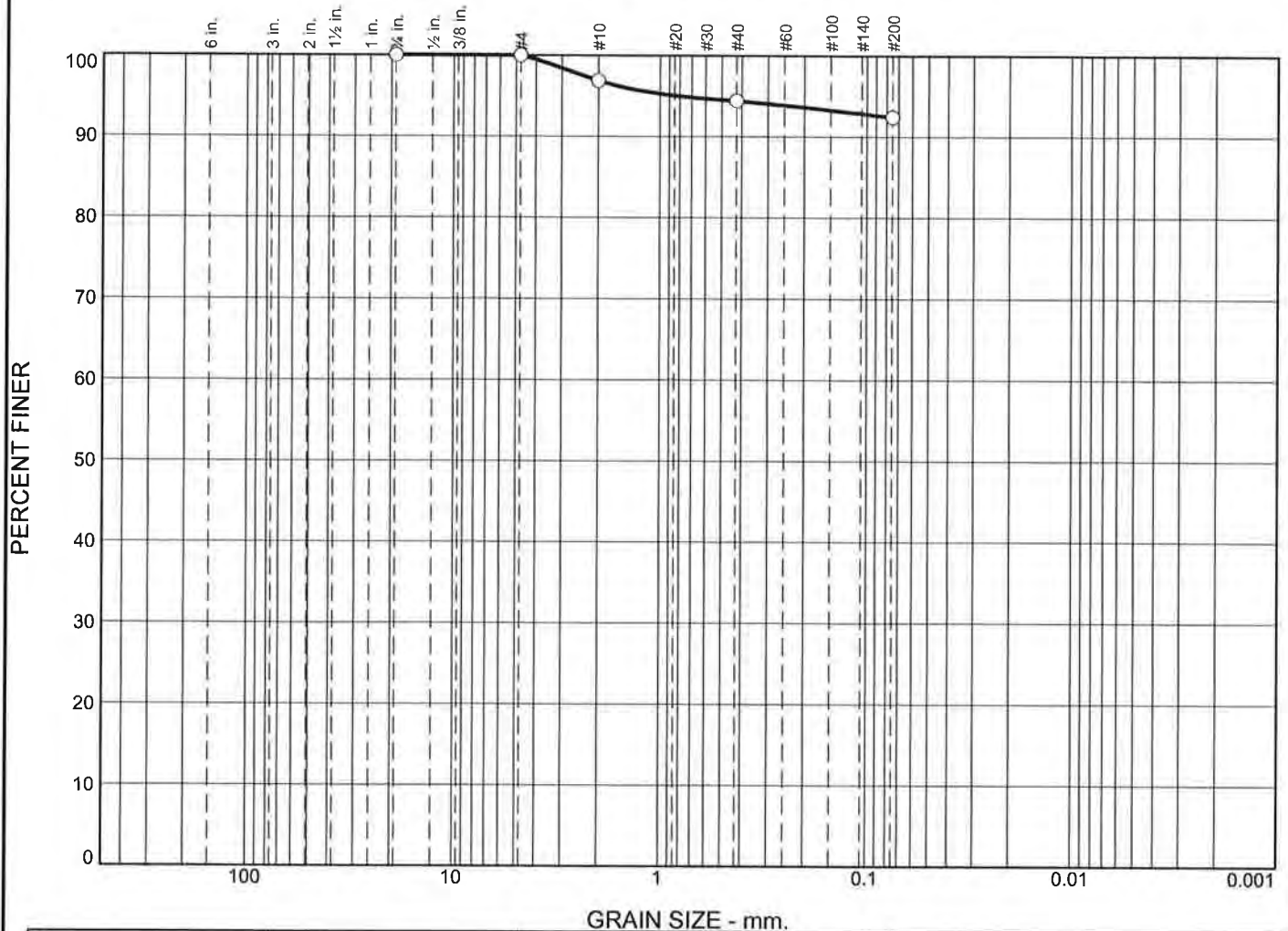
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	63.2	63.3			36.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0998	0.1245	0.2035	0.2348	0.2754	0.3324

**Fineness
Modulus**

0.40

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	3.1	2.5	2.0	92.4				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>											
<input type="radio"/>											
Material Description									USCS		AASHTO
<input type="radio"/>											
Project No. Client:						Remarks:					
Project:											
<input type="radio"/> Source of Sample: NHH-V-TOP Sample Number: L1727787-09											
Date: <input type="radio"/>											
Alpha Analytical						Figure					
Mansfield, MA											

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-V-TOP

Sample Number: L1727787-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.30
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.30	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.60	0.00	96.9
		#40	0.48	0.00	94.4
		#200	0.38	0.00	92.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.1	2.5	2.0	7.6			92.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.8028

**Fineness
Modulus**

0.25

GRAIN SIZE DISTRIBUTION TEST DATA

8/10/2017

Location: NHH-V-BOTTOM

Sample Number: L1727787-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.91
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.91	0.00	0.75	0.00	0.00	100.0
		#4	0.06	0.00	99.7
		#10	0.68	0.00	96.3
		#40	0.99	0.00	91.3
		#200	0.65	0.00	88.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	3.4	5.0	3.3	11.7			88.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.2303	1.4514

**Fineness
Modulus**

0.37

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA

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Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% coarse sand (172%), % medium sand (67%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:


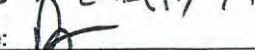
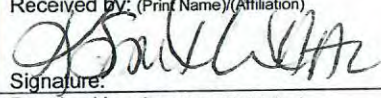
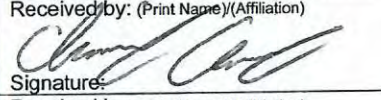
Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

L1727787

Page 1 of 1

Client/Project Name: USACE - NHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number: 60543021			Field Logbook No.:																			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:																			
Signature: 			Send Results/Report to: MARY O'CONNELL KOZIK			TAT: GHINSE 24hr CHEMISTRY-STD																
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	RAIN SIZE - SIEVE	METALS - 6020A/7474-7473	PCBS - 8082/8270 SIM	PESTICIDES - 8081 B	PAHS - 8270 D SIM	TOC - 9060	Lab I.D.	Remarks						
NHH - U - TOP	8/9/17	0705	X		807/1607	SD	40C	7/4	X	X	X	Y	X	Y		0 - 5'10"						
NHH - U - BOTTOM		0705	X						X	X	X	Y	X	X		5'10" - 30'						
NHH - P - TOP		1219							X	X	X	Y	X	X		0 - 5'9"						
NHH - P - BOTTOM		1219							X	X	X	Y	X	X		5'9" - 12'4"						
NHH - Q - TOP		1427							Y	Y	Y	X	X	X		0 - 5'3"						
NHH - Q - BOTTOM		1427							X	X	Y	Y	X	Y		5'3" - 29.5"						
NHH - W - TOP		1634							X	X	X	Y	X	X		0 - 5'6"						
NHH - W - BOTTOM		1634			807				X							5'6" - 8'2"						
NHH - V - TOP		1745			807/1607				X	X	X	Y	X	X		0 - 4'9"						
NHH - V - BOTTOM		1745							X	X	X	Y	X	X		4'9" - 8'7"						
<div>Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM Signature:  Date: 8/9/17 Time: 1900</div> <div>Received by: (Print Name)/(Affiliation)  Signature:  Date: 8/9/17 Time: 2129</div> <div>Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALWIP DRIVE WESTBOROUGH, MA ATTN: LI2 PORTA</div> <div> <div>Relinquished by: (Print Name)/(Affiliation) Signature: _____ Date: _____ Time: _____</div> <div>Received by: (Print Name)/(Affiliation) Signature: _____ Date: _____ Time: _____</div> <div> <div>Sample Shipped Via: UPS FedEx <u>Courier</u> Other</div> <div>Temp blank <u>Yes</u> No</div> </div> </div>																						



ANALYTICAL REPORT

Lab Number:	L1728048
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	08/11/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728048-01	NHH-R-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17
L1728048-02	NHH-R-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17
L1728048-03	NHH-S-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 09:55	08/10/17
L1728048-04	NHH-S-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 09:55	08/10/17
L1728048-05	NHH-J	SEDIMENT	NEW HAVEN, CT	08/10/17 11:41	08/10/17
L1728048-06	NHH-L	SEDIMENT	NEW HAVEN, CT	08/10/17 13:00	08/10/17
L1728048-07	NHH-K-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:09	08/10/17
L1728048-08	NHH-K-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 14:09	08/10/17
L1728048-09	NHH-H-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728048-10	NHH-H-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728048-11	NHH-H-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728048-12	NHH-I-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17
L1728048-13	NHH-I-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1031205-1 Laboratory Duplicate RPD for % Coarse sand (129%), % Medium sand (137%), % Fine sand (64%), performed on L1728048-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 08/11/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-01
Client ID: NHH-R-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	7.90		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	5.30		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	2.90		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	83.9		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728048

Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-02

Client ID: NHH-R-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/10/17 08:32

Date Received: 08/10/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	3.60		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	5.40		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	2.60		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	88.4		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728048

Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-03

Client ID: NHH-S-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/10/17 09:55

Date Received: 08/10/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	1.00		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	3.10		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	8.30		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	87.6		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728048

Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-04

Client ID: NHH-S-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/10/17 09:55

Date Received: 08/10/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	0.400		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	3.30		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	74.3		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	22.0		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-05
Client ID: NHH-J
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 11:41
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	10.1		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	9.20		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	7.60		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	73.1		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728048

Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-06

Client ID: NHH-L

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/10/17 13:00

Date Received: 08/10/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.200		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	4.40		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	5.00		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	6.10		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	84.3		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-07
Client ID: NHH-K-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.800		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	15.2		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	3.70		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	80.3		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-08
Client ID: NHH-K-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.300		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	8.10		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	51.3		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	38.7		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	1.60		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-09
Client ID: NHH-H-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	3.30		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	4.50		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	6.80		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	85.4		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-10
Client ID: NHH-H-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.400		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	5.00		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	5.90		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	5.90		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	82.8		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-11
Client ID: NHH-H-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	0.200		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	1.50		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	19.9		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	78.4		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-12
Client ID: NHH-I-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	2.70		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	8.80		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	9.80		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	78.7		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

SAMPLE RESULTS

Lab ID: L1728048-13
Client ID: NHH-I-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Coarse Sand	1.80		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Medium Sand	5.10		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Fine Sand	4.80		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP
% Total Fines	88.3		%	0.100	NA	1	-	08/11/17 14:12	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1728048
Report Date: 08/11/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG1031205-1 QC Sample: L1728048-01 Client ID: NHH-R-TOP						
% Total Gravel	ND	ND	%	NC		25
% Coarse Sand	7.90	1.70	%	129	Q	25
% Medium Sand	5.30	1.00	%	137	Q	25
% Fine Sand	2.90	1.50	%	64	Q	25
% Total Fines	83.9	95.8	%	13		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:08111716:06
Lab Number: L1728048
Report Date: 08/11/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728048-01A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-02A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-03A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-04A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-05A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-06A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-07A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-08A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-09A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 08111716:06
Lab Number: L1728048
Report Date: 08/11/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728048-10A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-11A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-12A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728048-13A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728048
Report Date: 08/11/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

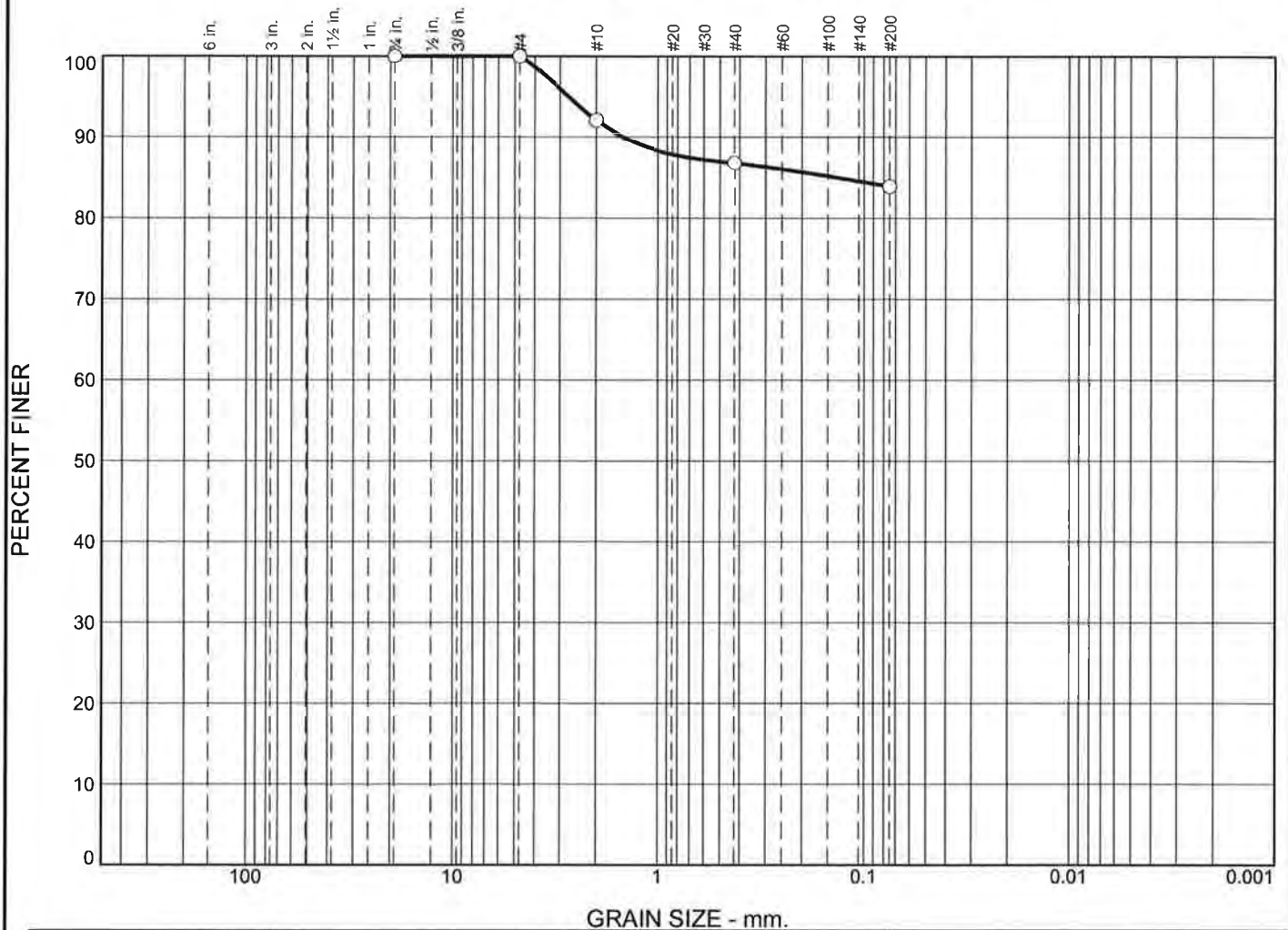
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"			% Gravel		% Sand			% Fines				
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	0.0	7.9	5.3	2.9	83.9				
<input type="checkbox"/>												
<input type="checkbox"/>												
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>				0.1353								
<input type="checkbox"/>												
<input type="checkbox"/>												
Material Description									USCS		AASHTO	
<input type="radio"/>												

Project No. Project: <input type="radio"/> Source of Sample: NHH-R-TOP Sample Number: L1728048-01 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: <div style="text-align: right;">Figure</div>

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-R-TOP

Sample Number: L1728048-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.78

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.78	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.41	0.00	92.1
		#40	0.94	0.00	86.8
		#200	0.51	0.00	83.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	7.9	5.3	2.9	16.1			83.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.1353	1.4863	2.7283

Fineness Modulus
0.59

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-R-TOP

Sample Number: WG1031205-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.23

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
17.23	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.29	0.00	98.3
		#40	0.18	0.00	97.3
		#200	0.25	0.00	95.8

Fractional Components

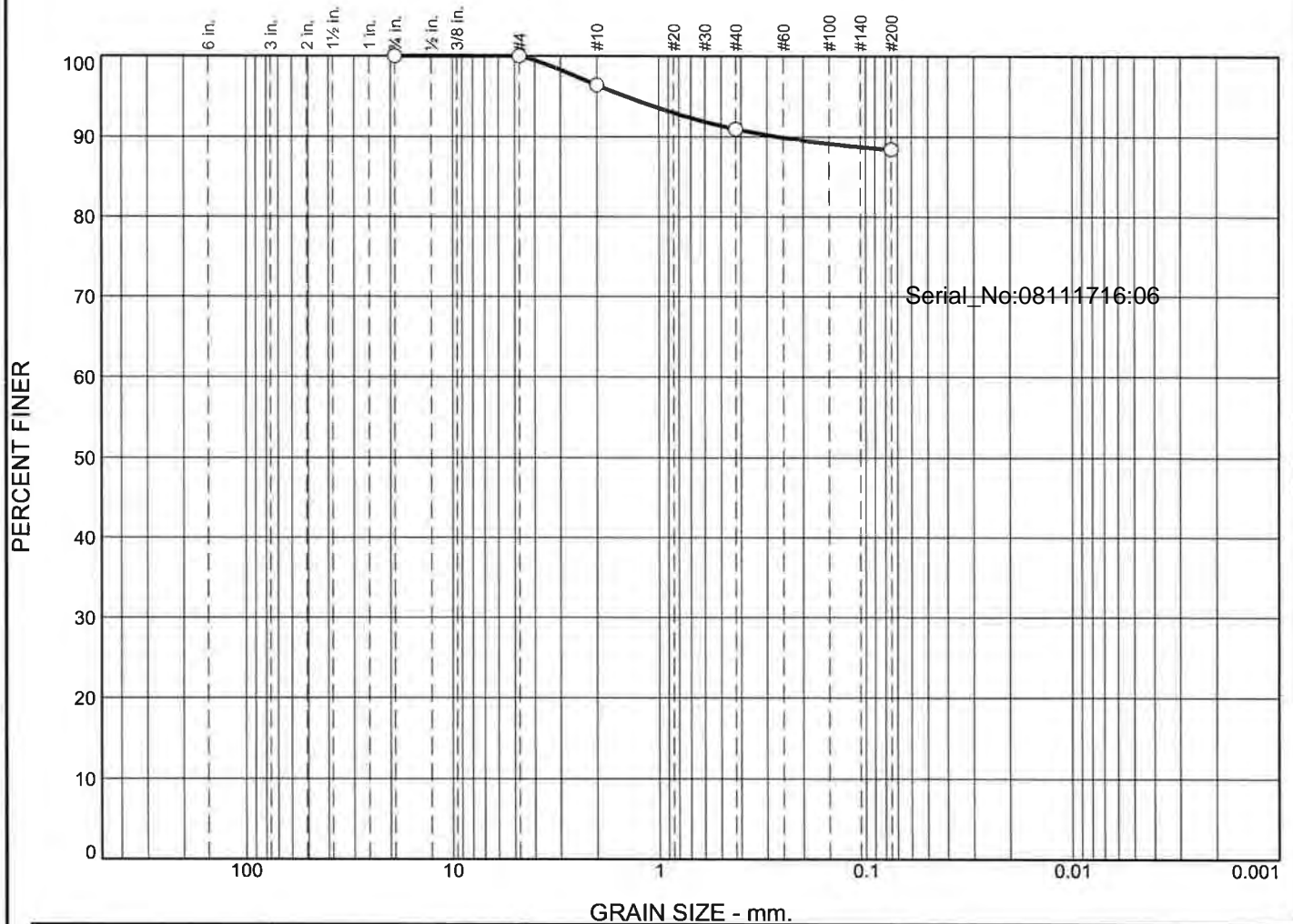
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.7	1.0	1.5	4.2			95.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus

0.13

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	3.6	5.4	2.6	88.4				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="checkbox"/>										

Material Description							USCS	AASHTO

Project No. Project: <input type="checkbox"/> Source of Sample: NHH-R-BOTTOM Sample Number: L1728048-02 Date: <input type="checkbox"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-R-BOTTOM

Sample Number: L1728048-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.45

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.45	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.70	0.00	96.4
		#40	1.06	0.00	91.0
		#200	0.49	0.00	88.4

Serial_No:08111716:06

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.6	5.4	2.6	11.6			88.4

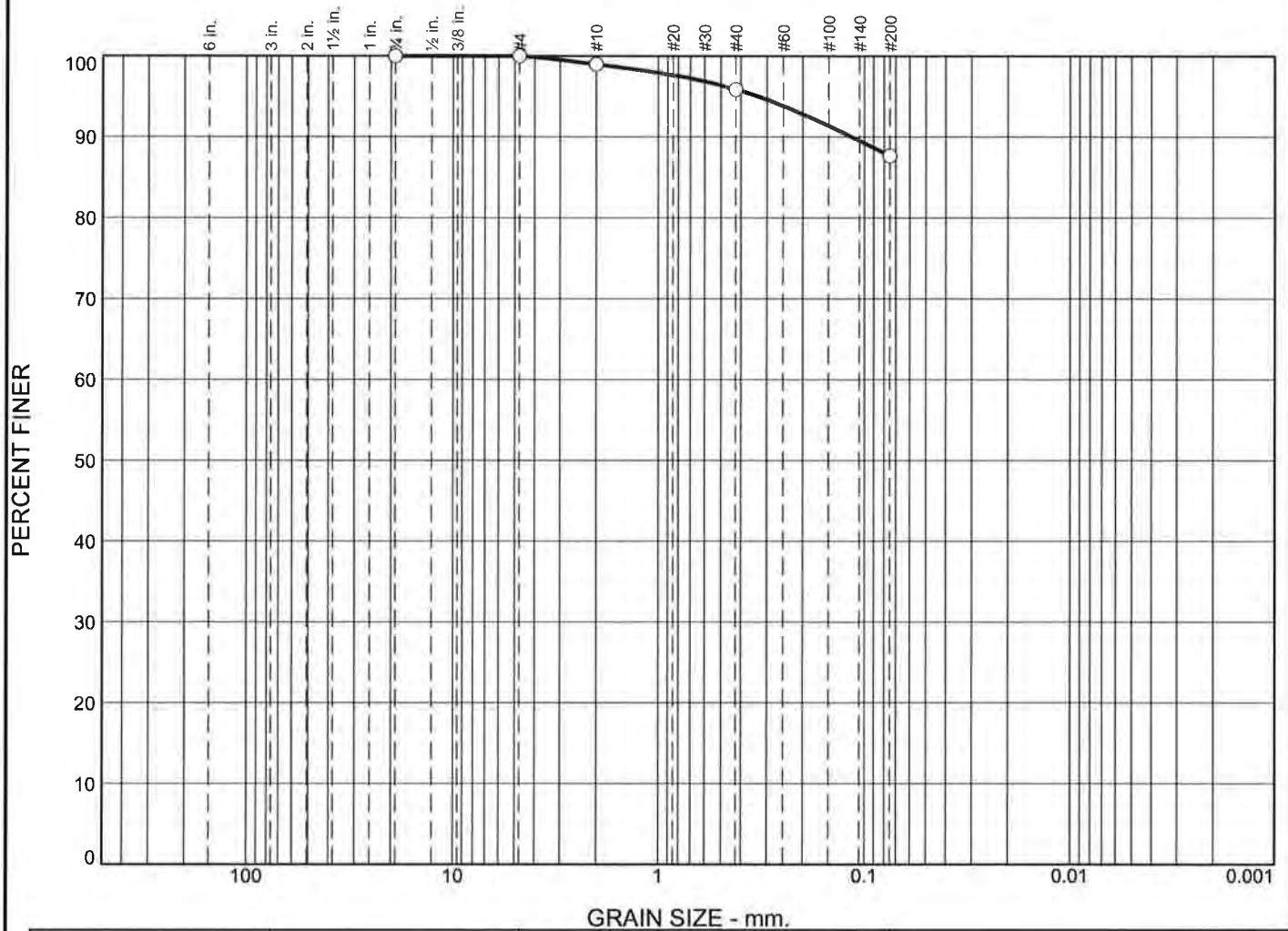
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.2658	1.4543

Fineness
Modulus

0.37

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"	% Gravel		% Sand			% Fines					
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay				
0.0	0.0	0.0	1.0	3.1	8.3	87.6					
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="checkbox"/>											
Material Description									USCS	AASHTO	
Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-S-TOP Sample Number: L1728048-03									Remarks:		
Date: <input type="checkbox"/>											
Alpha Analytical Mansfield, MA											
									Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-S-TOP**Sample Number:** L1728048-03**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 18.46
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
18.46	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.19	0.00	99.0
		#40	0.57	0.00	95.9
		#200	1.52	0.00	87.6

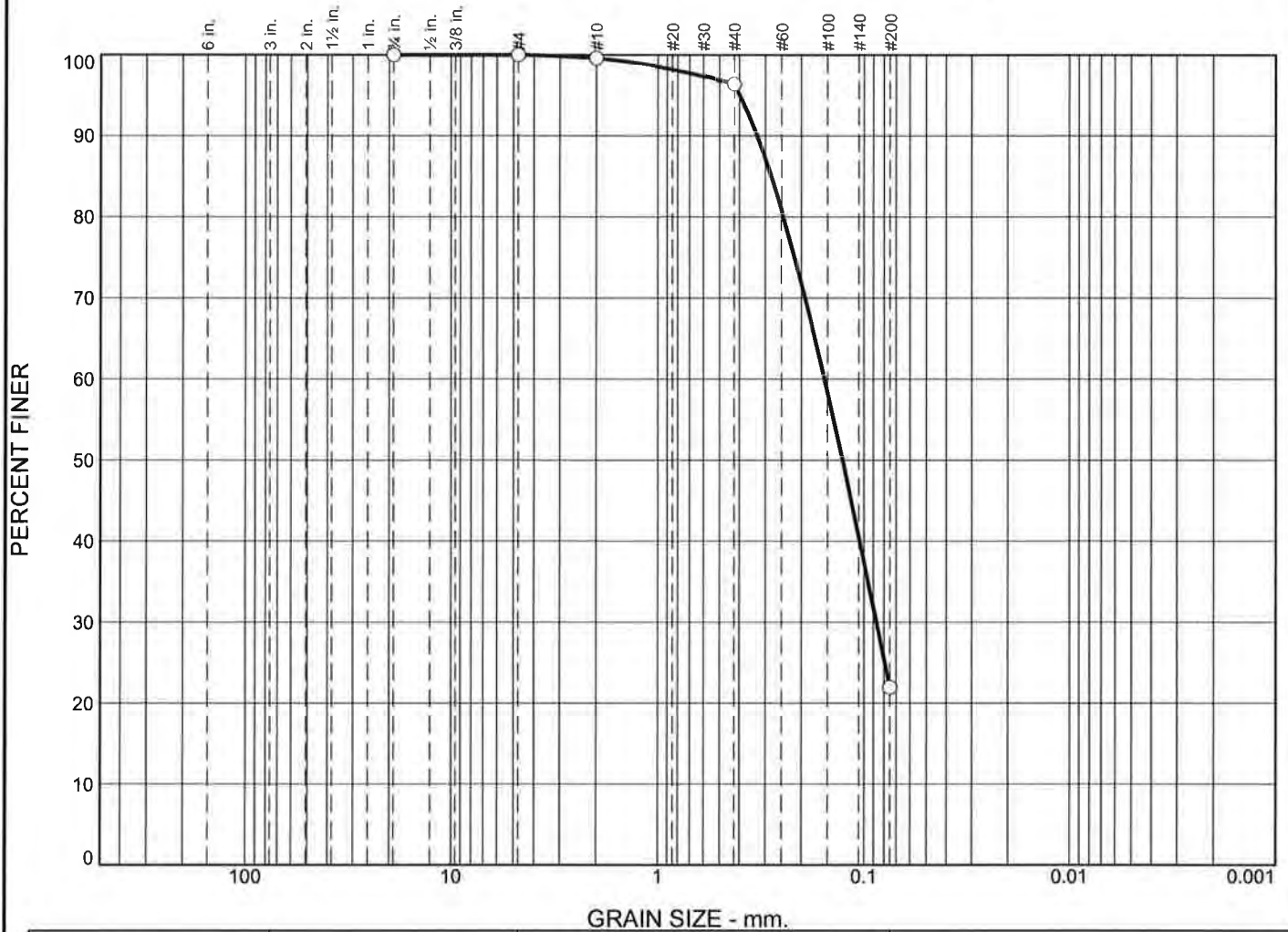
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.0	3.1	8.3	12.4			87.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.1156	0.3320

Fineness Modulus
0.20

Particle Size Distribution Report



GRAIN SIZE - mm.										
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0		0.0	0.0	0.4	3.3	74.3	22.0		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>				0.2810	0.1550	0.1268	0.0869			
<input type="radio"/>										
<input type="radio"/>										
Material Description								USCS	AASHTO	
<input type="radio"/>										

Project No. Project: <input type="radio"/> Source of Sample: NHH-S-BOTTOM Sample Number: L1728048-04 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-S-BOTTOM**Sample Number:** L1728048-04**Sieve Test Data****Post #200 Wash Test Weights (grams):** Dry Sample and Tare = 37.37

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
37.37	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	99.6
		#40	1.22	0.00	96.3
		#200	27.79	0.00	22.0

Fractional Components

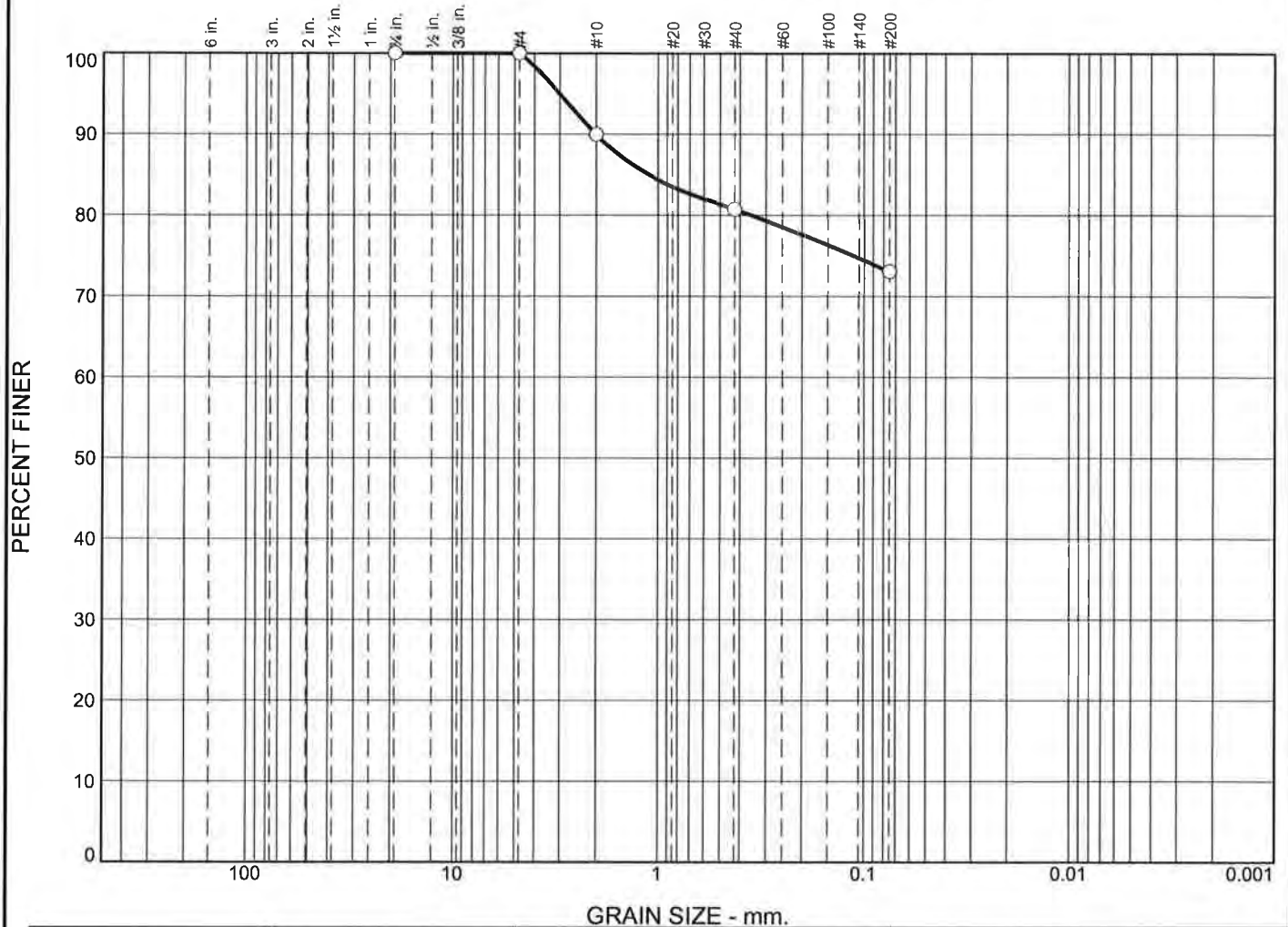
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	3.3	74.3	78.0			22.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0869	0.1268	0.1550	0.2449	0.2810	0.3288	0.3989

Fineness Modulus

0.59

Particle Size Distribution Report



GRAIN SIZE - mm.												
% +3"			% Gravel		% Sand			% Fines				
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	0.0	10.1	9.2	7.6	73.1				
<input type="radio"/>												
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>				1.1161								
<input type="radio"/>												
Material Description									USCS		AASHTO	
<input type="radio"/>												

Project No. Project: <input type="radio"/> Source of Sample: NHH-J Sample Number: L1728048-05 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-J

Sample Number: L1728048-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.49

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.49	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.96	0.00	89.9
		#40	1.80	0.00	80.7
		#200	1.49	0.00	73.1

Fractional Components

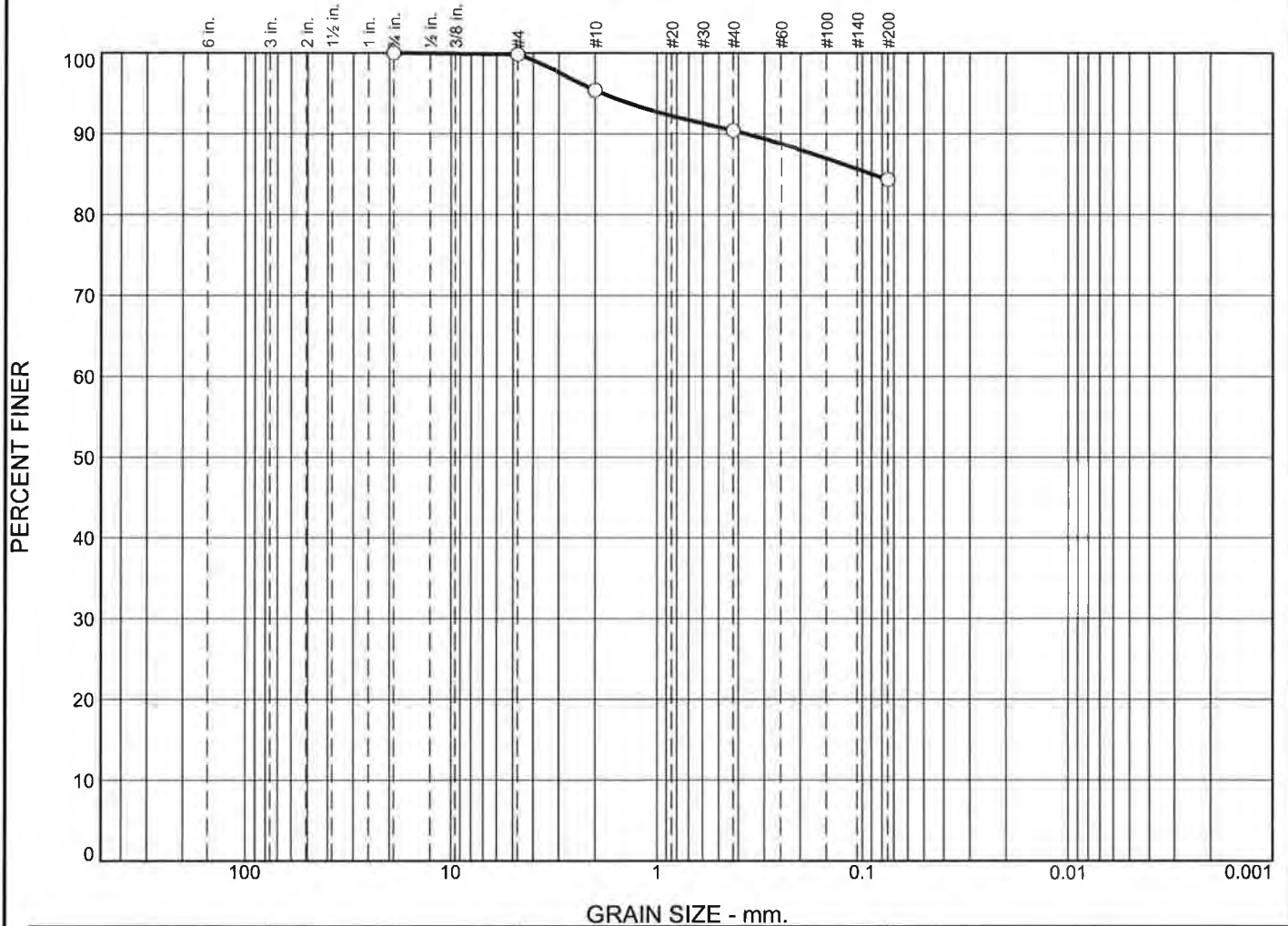
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	10.1	9.2	7.6	26.9			73.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.3543	1.1161	2.0102	3.0105

Fineness Modulus

0.85

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.2	4.4	5.0	6.1	84.3				

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			0.0894							

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-L Sample Number: L1728048-06 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-L

Sample Number: L1728048-06

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.56

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.56	0.00	0.75	0.00	0.00	100.0
		#4	0.04	0.00	99.8
		#10	0.96	0.00	95.4
		#40	1.07	0.00	90.4
		#200	1.31	0.00	84.3

Fractional Components

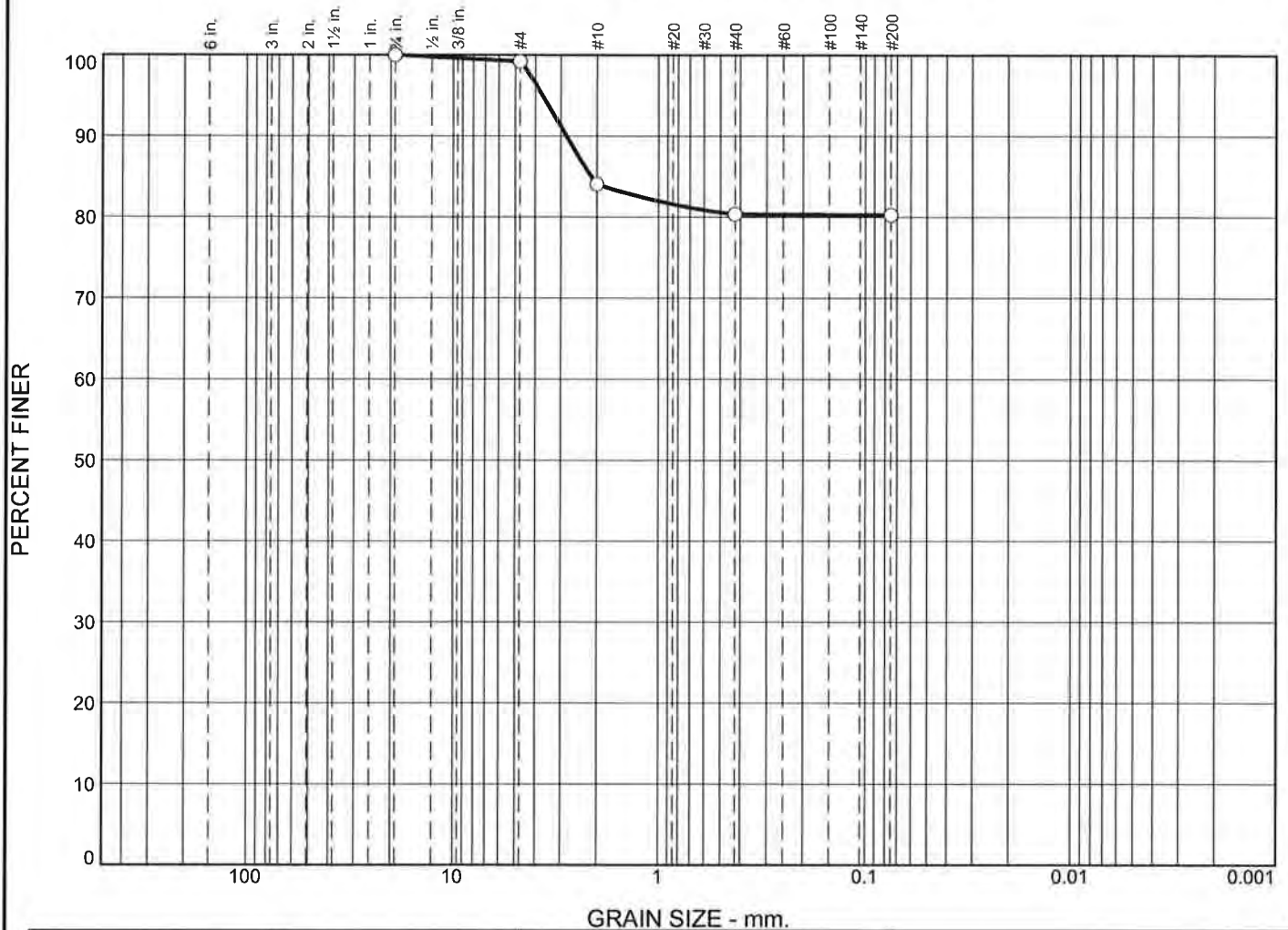
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	4.4	5.0	6.1	15.5			84.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.0894	0.3697	1.8570

**Fineness
Modulus**

0.43

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0	0.0	0.8	15.2	3.7		80.3			
<input type="checkbox"/>										
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>				2.1307						
<input type="checkbox"/>										

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-K-TOP Sample Number: L1728048-07 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-K-TOP

Sample Number: L1728048-07

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.76

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.76	0.00	0.75	0.00	0.00	100.0
		#4	0.19	0.00	99.2
		#10	3.60	0.00	84.0
		#40	0.88	0.00	80.3
		#200	0.02	0.00	80.3

Fractional Components

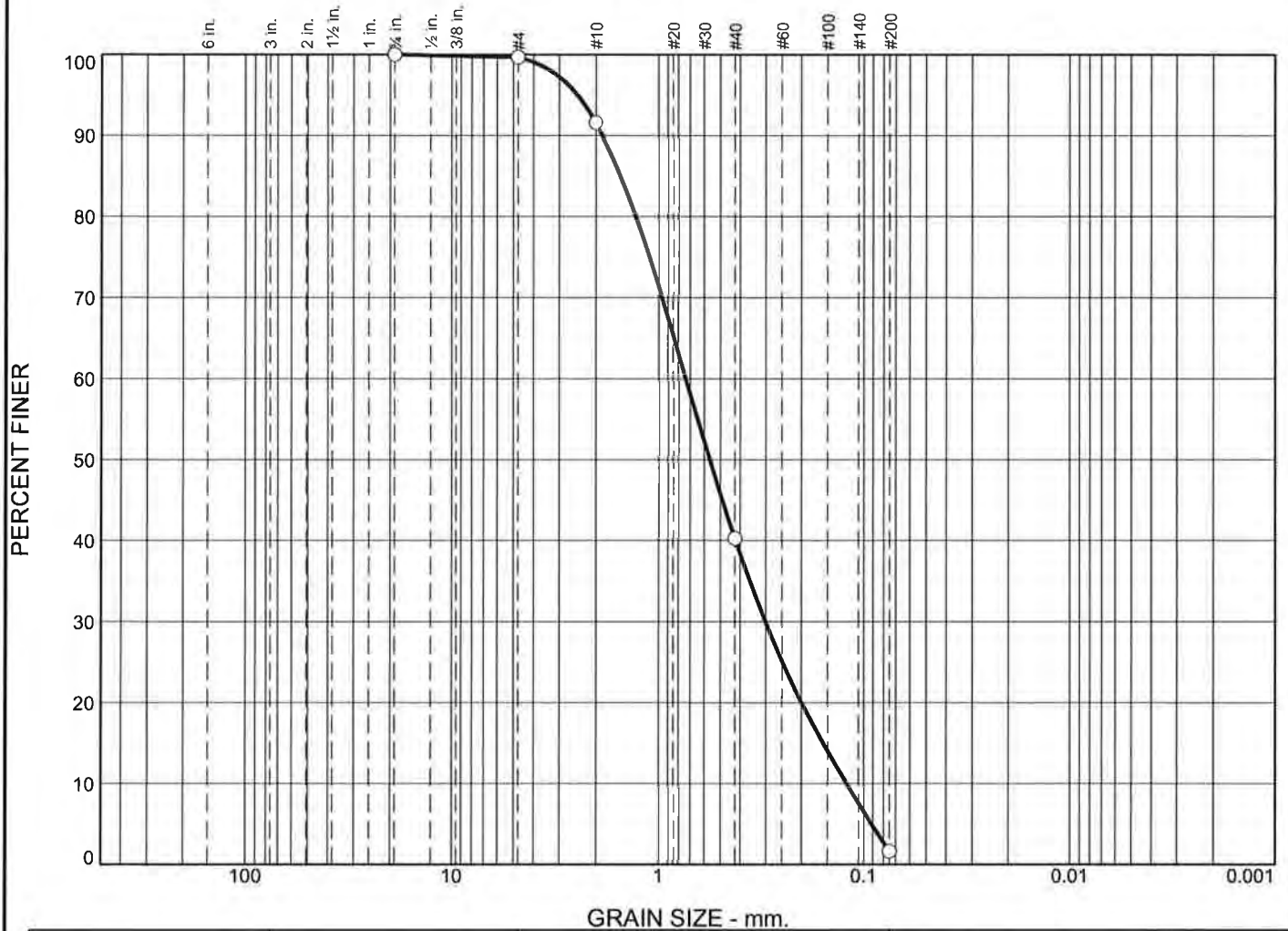
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.8	0.8	15.2	3.7		18.9			80.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							2.1307	2.8177	3.6595

**Fineness
Modulus**

0.91

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.3	8.1	51.3	38.7	1.6			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.5260	0.7362	0.5625	0.3012	0.1575	0.1211	1.02	6.08

Material Description								USCS	AASHTO
<input type="radio"/>								SW	

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-K-BOTTOM Sample Number: L1728048-08 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-K-BOTTOM**Sample Number:** L1728048-08**USCS Classification:** SW**Sieve Test Data****Post #200 Wash Test Weights (grams):** Dry Sample and Tare = 39.15

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
39.15	0.00	0.75	0.00	0.00	100.0
		#4	0.13	0.00	99.7
		#10	3.17	0.00	91.6
		#40	20.09	0.00	40.3
		#200	15.12	0.00	1.6

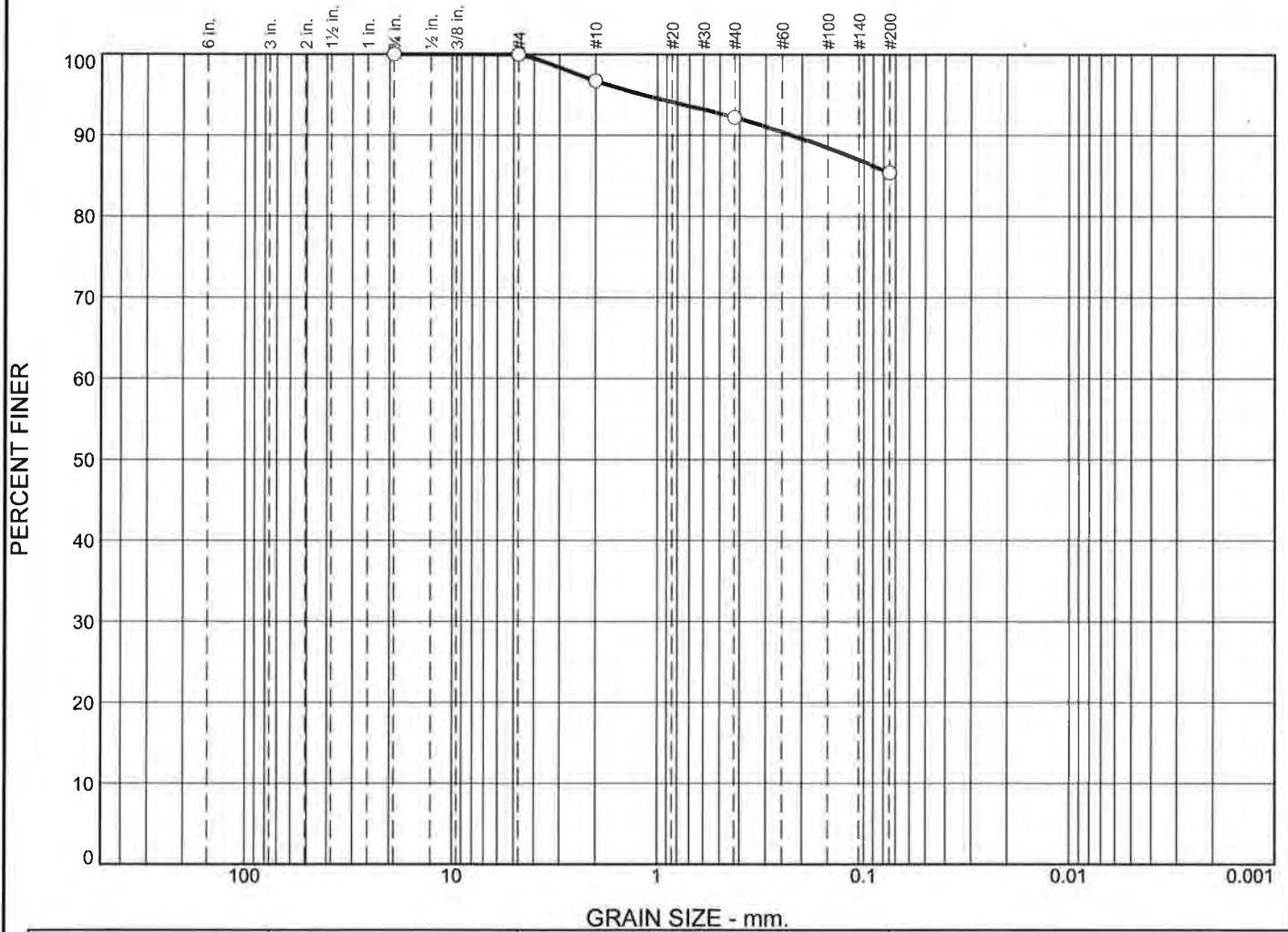
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	8.1	51.3	38.7	98.1			1.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1211	0.1575	0.2000	0.3012	0.5625	0.7362	1.2921	1.5260	1.8578	2.4533

Fineness Modulus	C _u	C _c
2.33	6.08	1.02

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	3.3	4.5	6.8	85.4			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>											

Material Description									USCS	AASHTO
<input type="radio"/>										

Project No. Project: <input type="radio"/> Source of Sample: NHH-H-TOP Sample Number: L1728048-09 Date: <input type="radio"/> <div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	Remarks: <div style="text-align: right;"> Figure </div>
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GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-H-TOP

Sample Number: L1728048-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.50
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.50	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.77	0.00	96.7
		#40	1.06	0.00	92.2
		#200	1.60	0.00	85.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.3	4.5	6.8	14.6			85.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.2245	1.1850

Fineness Modulus
0.35

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-H-REP-TOP

Sample Number: L1728048-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.85

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.85	0.00	0.75	0.00	0.00	100.0
		#4	0.08	0.00	99.6
		#10	1.11	0.00	94.6
		#40	1.27	0.00	88.7
		#200	1.30	0.00	82.8

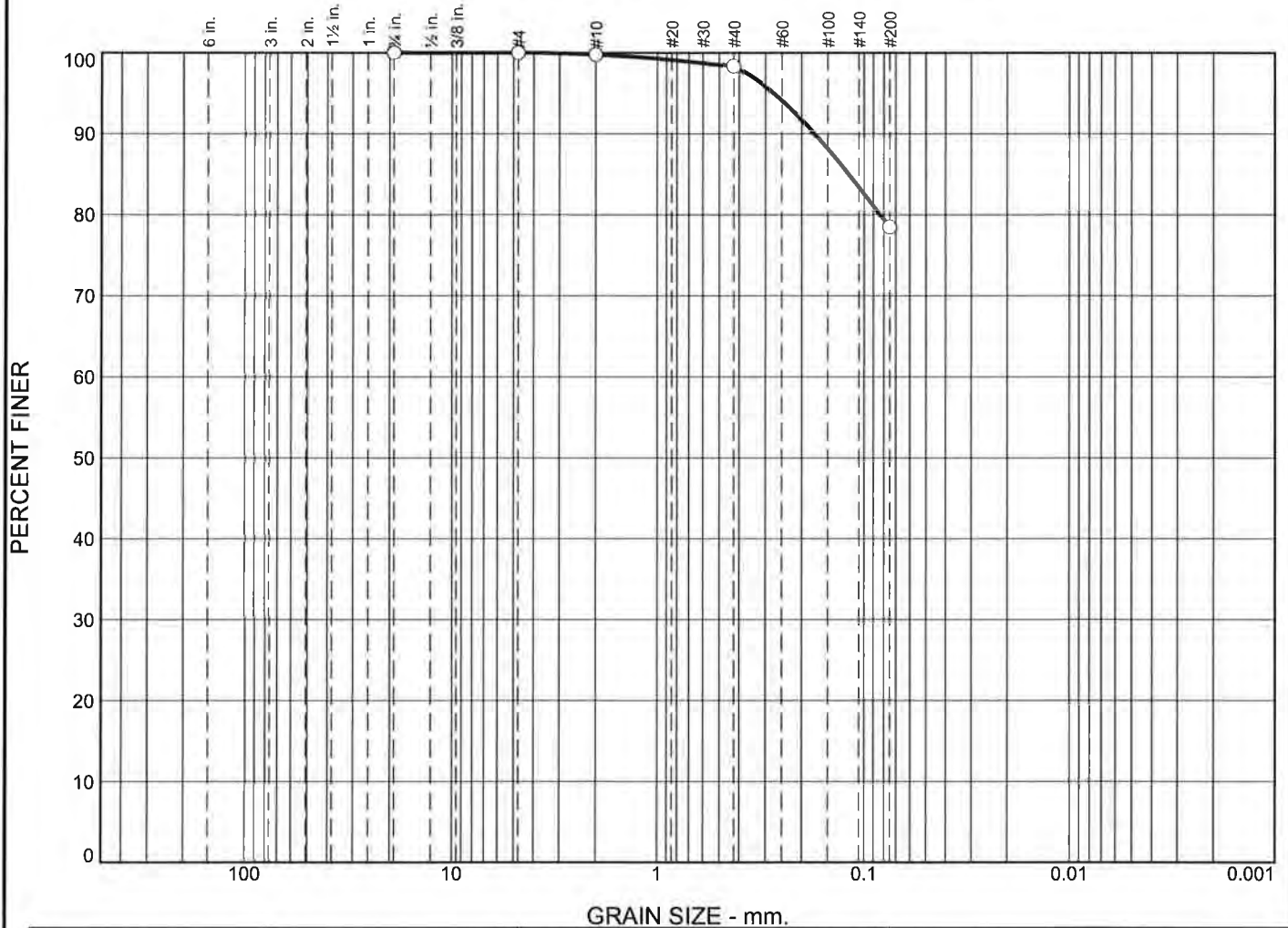
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.4	0.4	5.0	5.9	5.9	16.8			82.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.1381	0.6512	2.1554

Fineness Modulus
0.50

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	0.2	1.5	19.9	78.4				

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			0.1192							

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-H-BOTTOM Sample Number: L1728048-11 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-H-BOTTOM

Sample Number: L1728048-11

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 30.31

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
30.31	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.07	0.00	99.8
		#40	0.45	0.00	98.3
		#200	6.02	0.00	78.4

Fractional Components

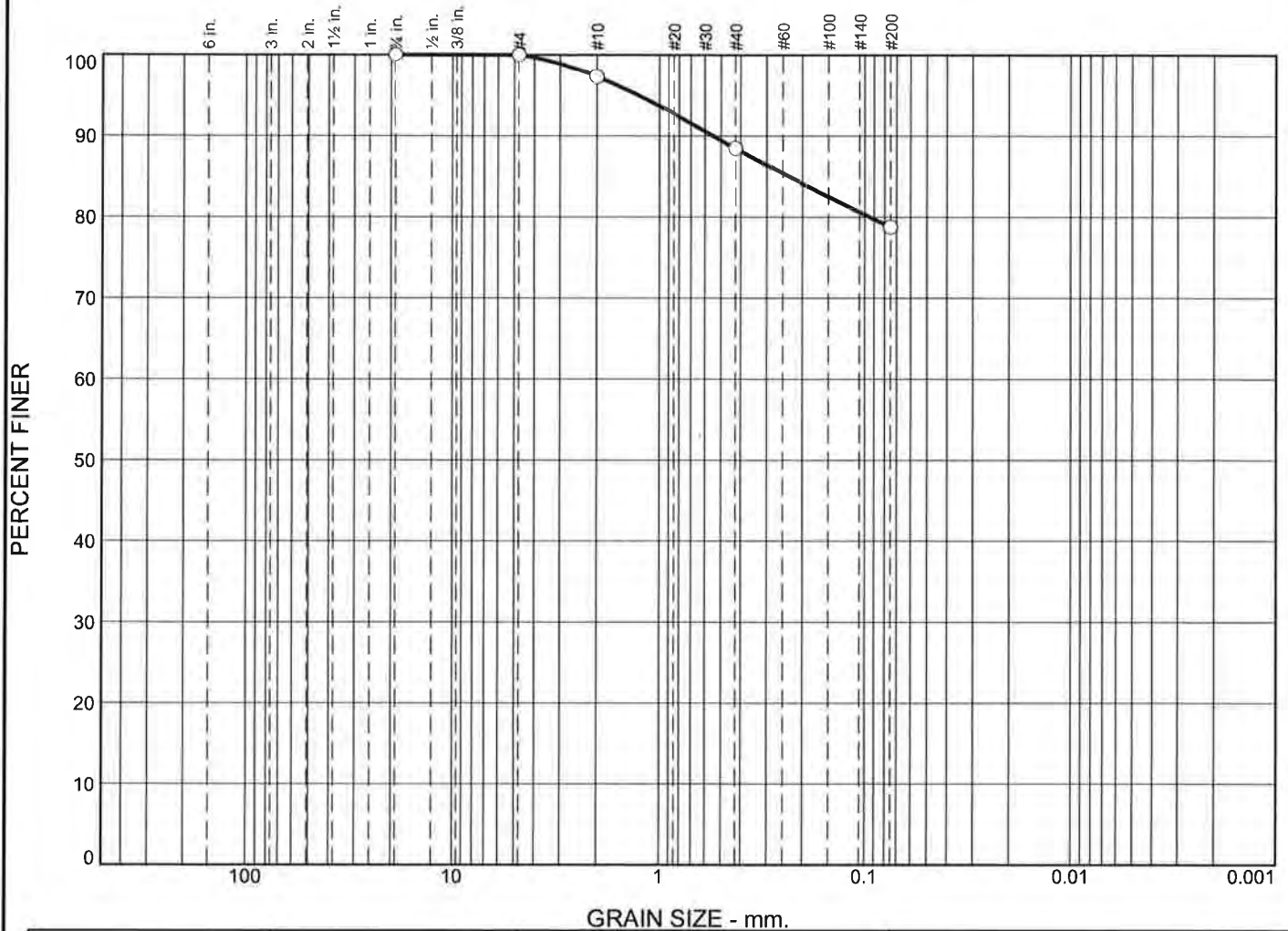
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	1.5	19.9	21.6			78.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0837	0.1192	0.1746	0.2756

**Fineness
Modulus**

0.18

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	2.7	8.8	9.8	78.7				

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			0.2352							

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-I-TOP Sample Number: L1728048-12 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-I-TOP

Sample Number: L1728048-12

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.05

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.05	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.62	0.00	97.3
		#40	2.04	0.00	88.5
		#200	2.24	0.00	78.7

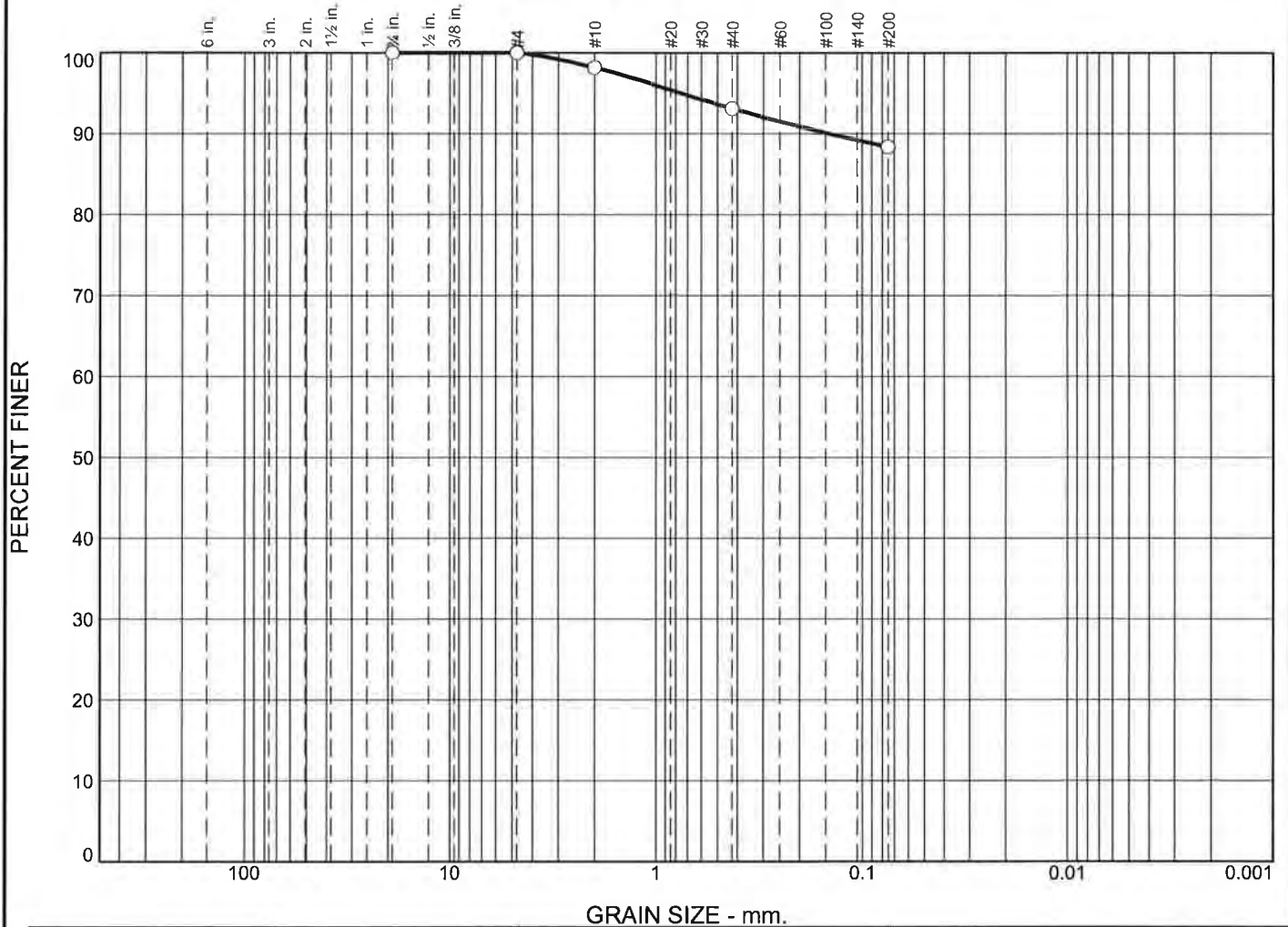
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.7	8.8	9.8	21.3			78.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0947	0.2352	0.5466	1.2621

Fineness Modulus
0.48

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	0.0	1.8	5.1	4.8	88.3				

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-I-BOTTOM Sample Number: L1728048-13 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/11/2017

Location: NHH-I-BOTTOM

Sample Number: L1728048-13

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.11
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.11	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.39	0.00	98.2
		#40	1.07	0.00	93.1
		#200	1.00	0.00	88.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.8	5.1	4.8	11.7			88.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.1439	0.7552

Fineness Modulus
0.29

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% coarse sand (129%), % medium sand (137%), % fine sand (64%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

11728048
11728049 BB

Page 1 of 2

Client/Project Name:
WACE-MHH-FMPProject Location:
New Haven, CTProject Number:
60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):
C. Steve Hone / AECOM

Chain of Custody Tape Nos.:

Signature:

Send Results/Report to:

TAT:

Analysis Requested

Container Type

P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation

1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - WaterS - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification

Date

Time

C
O
M
PG
R
A
BSample
Container
(Size/Mat'l)

Matrix

Preserv.

Field
Filtered

Grain Size

Metals - 6030A / 7471B

PCBs - 8082 / 8270-SIM

Pesticides - 8081B

PAHs - 8200-SIM

TOC - 9060

Lab
I.D.

Remarks

NHH-R-Top

8/14/17

0832

X

80Z/160Z

SD

4°C

NA

X

X

X

X

X

X

X

X

X

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NHH-R-Bottom

0832

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NHH-K-Top

1409

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NHH-K-Bottom

1409

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NHH-H-Top

1458

X

80Z/160Z

SD

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NHH-H-Rep-Top

1458



ANALYTICAL REPORT

Lab Number:	L1728229
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE-NHH-FNP
Project Number:	60543021
Report Date:	08/14/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728229-01	NHH-G-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1728229-02	NHH-G-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1728229-03	NHH-C-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1728229-04	NHH-C-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1728229-05	NHH-B	SEDIMENT	NEW HAVEN, CT	08/11/17 11:57	08/11/17
L1728229-06	NHH-A-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 13:40	08/11/17
L1728229-07	NHH-A-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 13:40	08/11/17
L1728229-08	NHH-D-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1728229-09	NHH-D-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1728229-10	NHH-F-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1728229-11	NHH-F-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1728229-12	NHH-F-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17

Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1031751-1 Laboratory Duplicate RPD for % Fine gravel (53%), performed on L1728229-05, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 08/14/17

INORGANICS & MISCELLANEOUS

Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-01

Client ID: NHH-G-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 08:37

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.500		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	1.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	2.80		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	4.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	91.7		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-02

Client ID: NHH-G-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 08:37

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	0.700		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	2.50		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	4.70		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	92.1		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-03
Client ID: NHH-C-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.100		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	0.900		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	12.8		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	59.2		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	27.0		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-04

Client ID: NHH-C-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 10:33

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	2.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	3.80		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	11.4		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	45.3		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	37.5		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-05
Client ID: NHH-B
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 11:57
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.40		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	2.80		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	23.2		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	57.0		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	15.6		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-06
Client ID: NHH-A-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.50		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	4.50		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	41.8		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	42.6		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	9.60		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-07
Client ID: NHH-A-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	1.80		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	26.9		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	68.0		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	3.30		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-08
Client ID: NHH-D-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	1.90		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	8.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	10.1		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	79.0		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-09

Client ID: NHH-D-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 15:07

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.300		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	1.20		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	4.10		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	7.90		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	86.5		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-10
Client ID: NHH-F-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.400		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	0.300		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	1.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	2.00		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	96.3		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-11

Client ID: NHH-F-REP-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 16:50

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	0.800		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	0.900		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	1.70		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	96.6		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

SAMPLE RESULTS

Lab ID: L1728229-12
Client ID: NHH-F-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.300		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Coarse Sand	1.40		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Medium Sand	1.10		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Fine Sand	1.80		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP
% Total Fines	95.4		%	0.100	NA	1	-	08/14/17 12:31	12,D6913/D7928	SP



Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE-NHH-FNP

Project Number: 60543021

Lab Number: L1728229

Report Date: 08/14/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1031751-1 QC Sample: L1728229-05 Client ID: NHH-B						
% Total Gravel	1.40	2.40	%	53	Q	25
% Coarse Sand	2.80	2.30	%	20		25
% Medium Sand	23.2	23.2	%	0		25
% Fine Sand	57.0	52.4	%	8		25
% Total Fines	15.6	19.7	%	23		25
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1031751-2 QC Sample: L1728229-12 Client ID: NHH-F-BOTTOM						
% Total Gravel	0.300	ND	%	NC		25
% Coarse Sand	1.40	ND	%	NC		25
% Medium Sand	1.10	0.900	%	20		25
% Fine Sand	1.80	1.40	%	25		25
% Total Fines	95.4	97.7	%	2		25

Project Name: USACE-NHH-FNP
Project Number: 60543021

Serial_No:08141716:30
Lab Number: L1728229
Report Date: 08/14/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728229-01A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-02A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-03A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-04A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-05A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-05A1	Bag	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-05A2	Bag	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-06A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-07A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE-NHH-FNP
Project Number: 60543021

Serial_No: 08141716:30
Lab Number: L1728229
Report Date: 08/14/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728229-08A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-09A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-10A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-11A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-12A	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-12A1	Bag	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728229-12A2	Plastic 8oz unpreserved for Grain Size	A	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH-FNP
Project Number: 60543021

Lab Number: L1728229
Report Date: 08/14/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

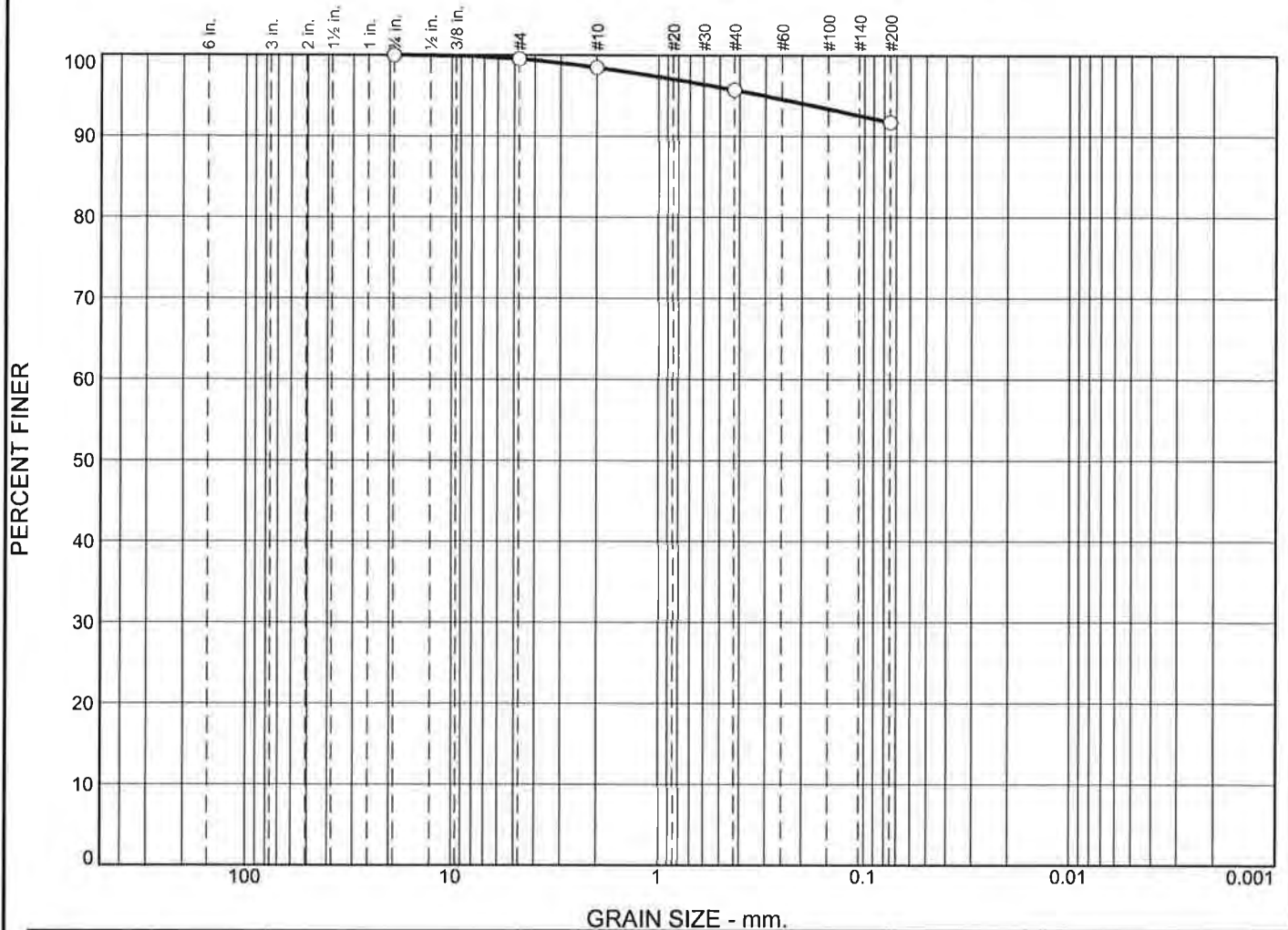
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0	0.0	0.5	1.0	2.8	4.0	91.7				
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○											

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-G-TOP Sample Number: L1728229-01 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: <div style="text-align: right;">Figure</div>

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-G-TOP

Sample Number: L1728229-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.81

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.81	0.00	0.75	0.00	0.00	100.0
		#4	0.10	0.00	99.5
		#10	0.22	0.00	98.5
		#40	0.57	0.00	95.7
		#200	0.83	0.00	91.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	1.0	2.8	4.0	7.8			91.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.3027

**Fineness
Modulus**

0.19

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-G-BOTTOM

Sample Number: L1728229-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.20

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.20	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.16	0.00	99.3
		#40	0.59	0.00	96.8
		#200	1.08	0.00	92.1

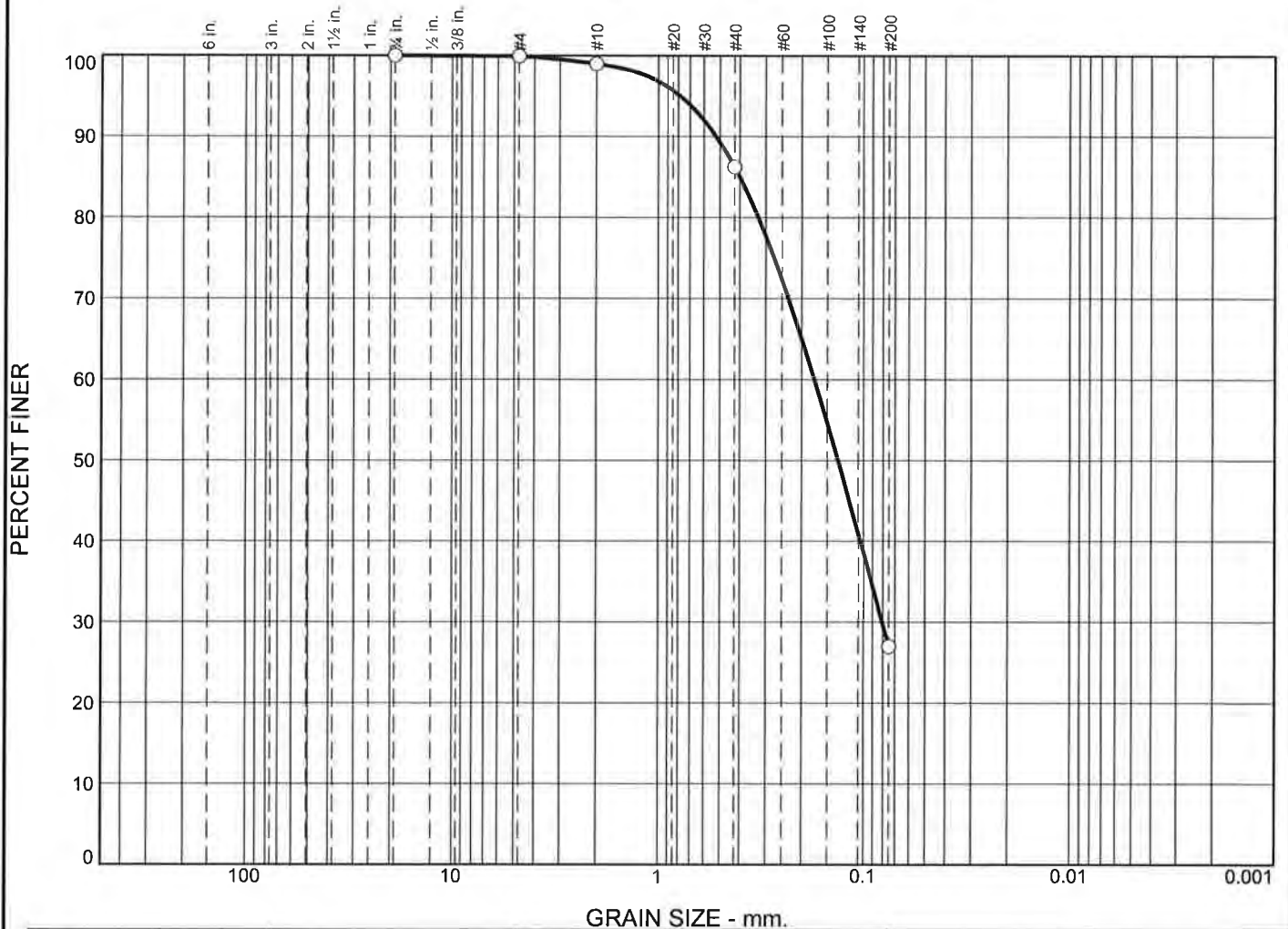
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.7	2.5	4.7	7.9			92.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
									0.2076

Fineness Modulus
0.14

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/> 0.0	0.0	0.1	0.9	12.8	59.2	27.0				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>				0.4012	0.1736	0.1330	0.0807			C _u

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-C-TOP Sample Number: L1728229-03 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-C-TOP

Sample Number: L1728229-03

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 32.53

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
32.53	0.00	0.75	0.00	0.00	100.0
		#4	0.03	0.00	99.9
		#10	0.30	0.00	99.0
		#40	4.15	0.00	86.2
		#200	19.27	0.00	27.0

Fractional Components

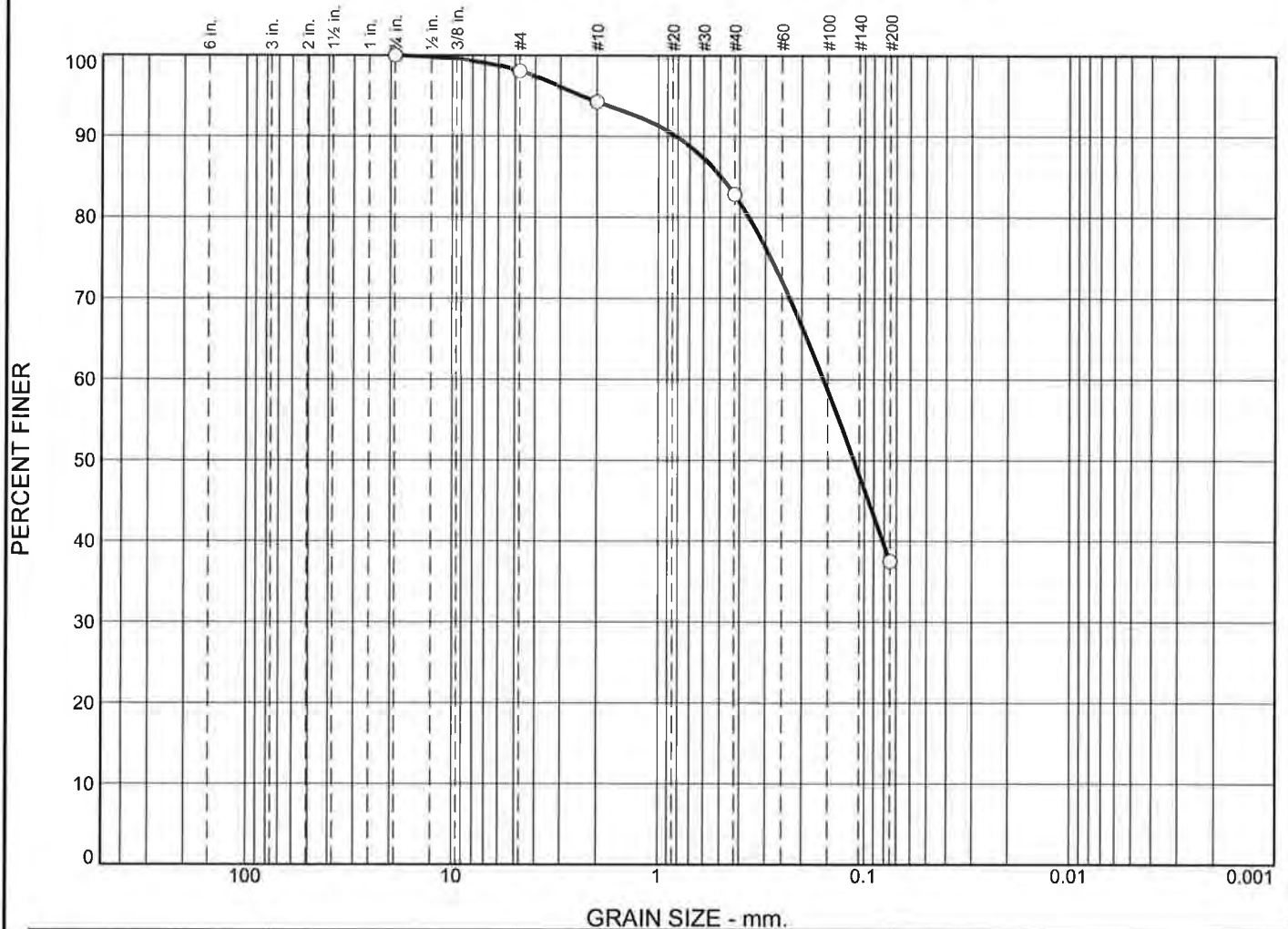
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.9	12.8	59.2	72.9			27.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0807	0.1330	0.1736	0.3263	0.4012	0.5222	0.7822

Fineness Modulus

0.79

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/> 0.0	0.0	2.0	3.8	11.4	45.3	37.5				
<input type="radio"/>										
<input checked="" type="radio"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>				0.4952	0.1576	0.1123				
<input type="radio"/>										

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-C-BOTTOM Sample Number: L1728229-04 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-C-BOTTOM

Sample Number: L1728229-04

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 29.67

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
29.67	0.00	0.75	0.00	0.00	100.0
		#4	0.59	0.00	98.0
		#10	1.12	0.00	94.2
		#40	3.40	0.00	82.8
		#200	13.43	0.00	37.5

Fractional Components

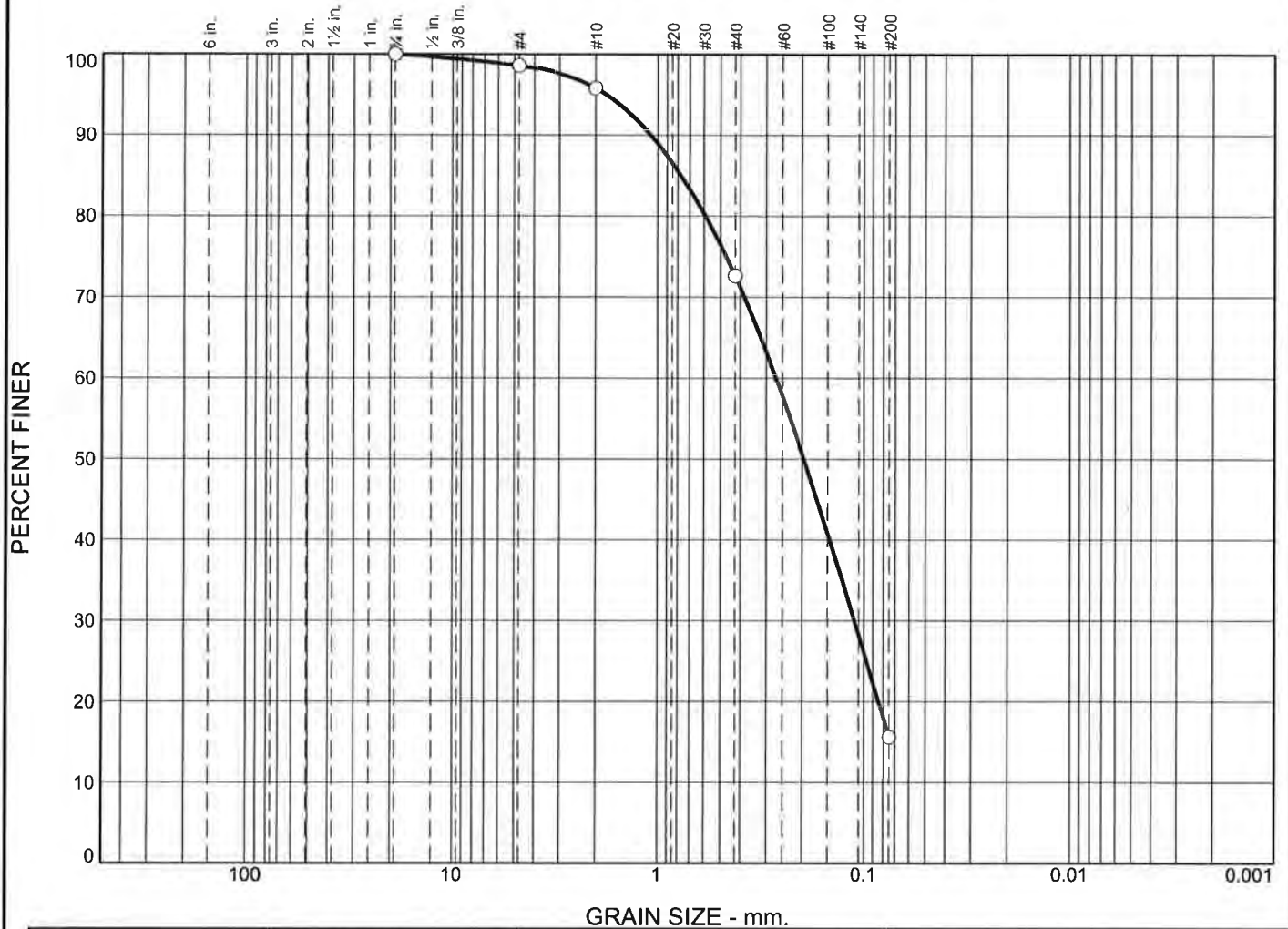
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.0	2.0	3.8	11.4	45.3	60.5			37.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1123	0.1576	0.3617	0.4952	0.8211	2.3776

Fineness
Modulus

0.93

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/> 0.0	0.0	1.4	2.8	23.2	57.0	15.6				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>				0.7721	0.2693	0.1966	0.1110			

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-B Sample Number: L1728229-05 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-B

Sample Number: L1728229-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 37.01

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
37.01	0.00	0.75	0.00	0.00	100.0
		#4	0.53	0.00	98.6
		#10	1.03	0.00	95.8
		#40	8.57	0.00	72.6
		#200	21.10	0.00	15.6

Fractional Components

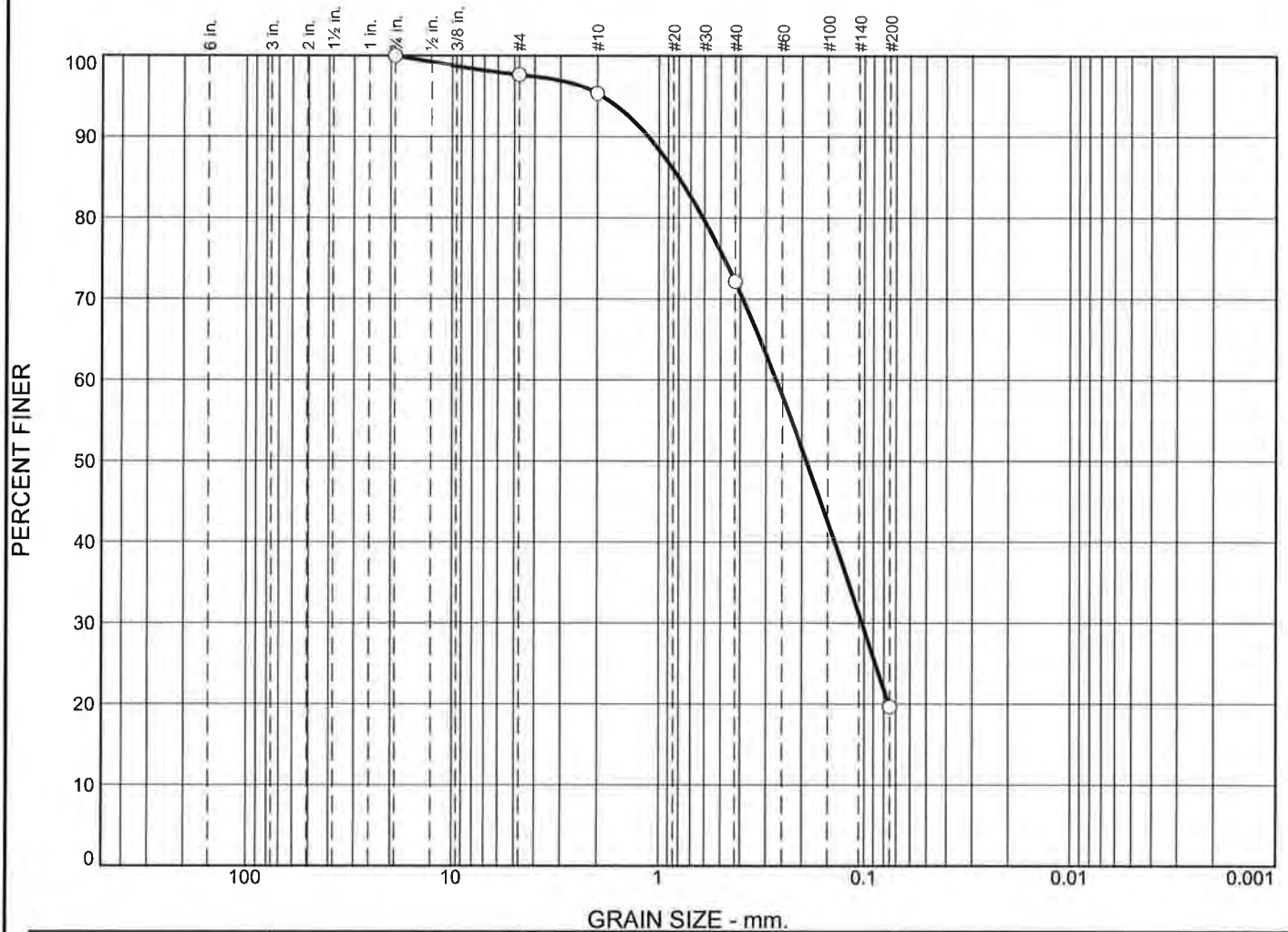
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.4	1.4	2.8	23.2	57.0	83.0			15.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0845	0.1110	0.1966	0.2693	0.5897	0.7721	1.0825	1.7818

Fineness
Modulus

1.30

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	2.4	2.3	23.2	52.4	19.7			
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.8034	0.2673	0.1905	0.1022				

Material Description							USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-B Sample Number: WG1031751-1 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: <div style="text-align: right;">Figure</div>

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-B

Sample Number: WG1031751-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.31
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
36.31	0.00	0.75	0.00	0.00	100.0
		#4	0.86	0.00	97.6
		#10	0.84	0.00	95.3
		#40	8.42	0.00	72.1
		#200	19.05	0.00	19.7

Fractional Components

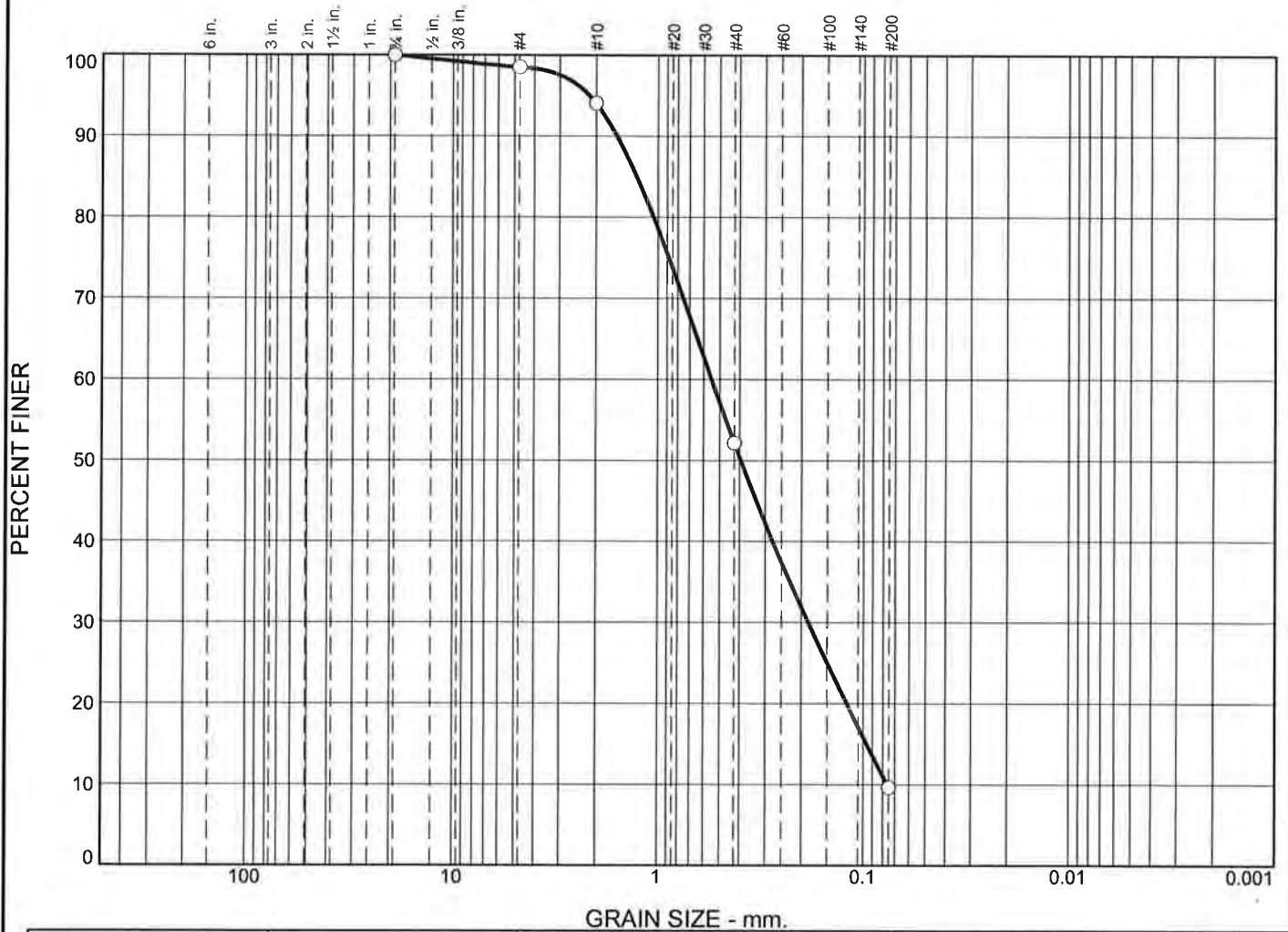
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.4	2.4	2.3	23.2	52.4	77.9			19.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0758	0.1022	0.1905	0.2673	0.6101	0.8034	1.1305	1.9009

**Fineness
Modulus**

1.32

Particle Size Distribution Report



GRAIN SIZE (mm):												
% +3"			% Gravel		% Sand			% Fines				
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	1.5	4.5	41.8	42.6	9.6				
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				1.2684	0.5477	0.3951	0.1852	0.0959	0.0762	0.82	7.18	

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-A-TOP Sample Number: L1728229-06 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-A-TOP

Sample Number: L1728229-06

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 37.23

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
37.23	0.00	0.75	0.00	0.00	100.0
		#4	0.56	0.00	98.5
		#10	1.66	0.00	94.0
		#40	15.59	0.00	52.2
		#200	15.83	0.00	9.6

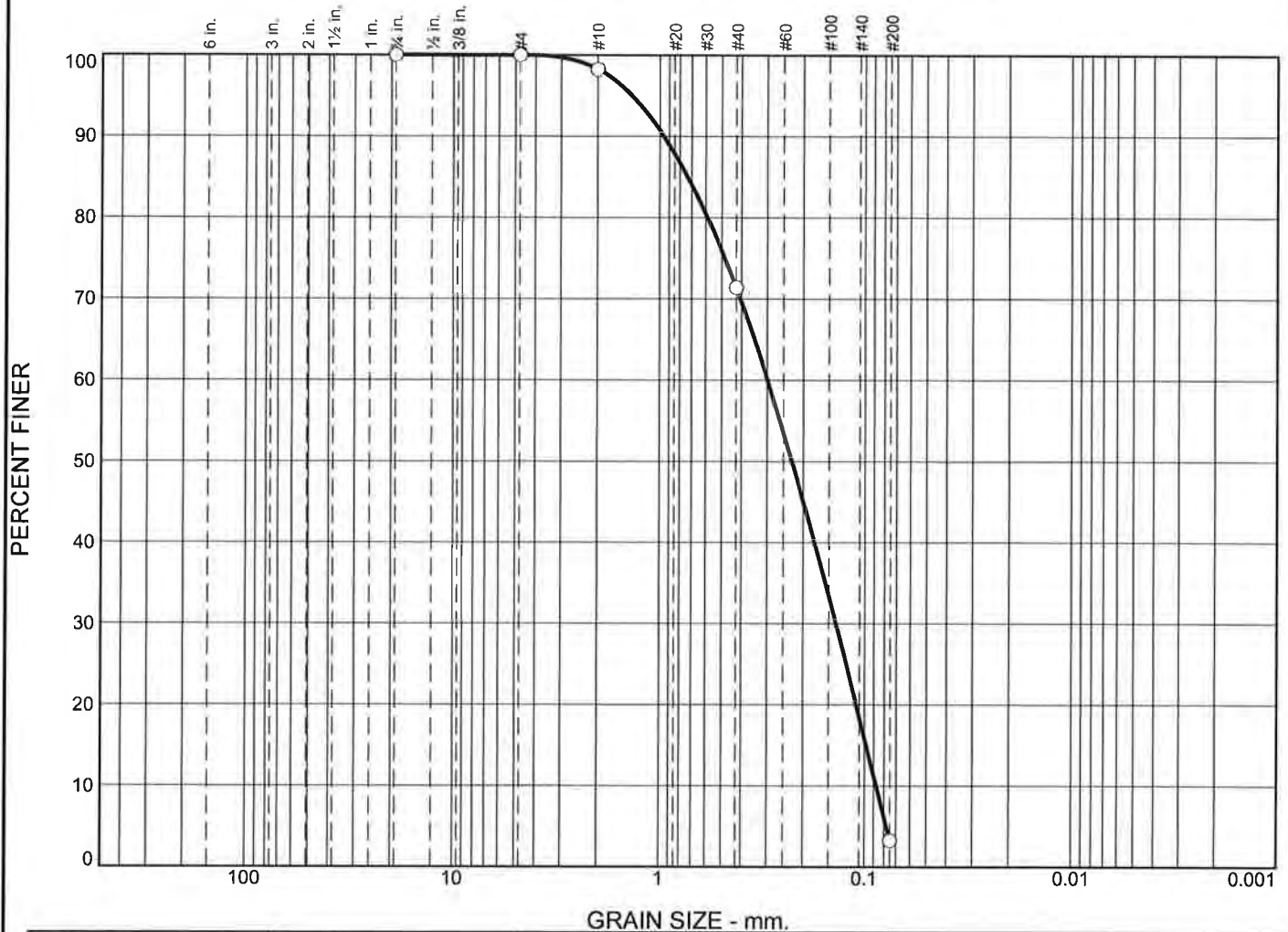
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.5	1.5	4.5	41.8	42.6	88.9			9.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0762	0.0959	0.1201	0.1852	0.3951	0.5477	1.0508	1.2684	1.5808	2.1573

Fineness Modulus	C _u	C _c
1.93	7.18	0.82

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-A-BOTTOM**Sample Number:** L1728229-07**USCS Classification:** SP**Sieve Test Data****Post #200 Wash Test Weights (grams):** Dry Sample and Tare = 37.96

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
37.96	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.67	0.00	98.2
		#40	10.22	0.00	71.3
		#200	25.83	0.00	3.3

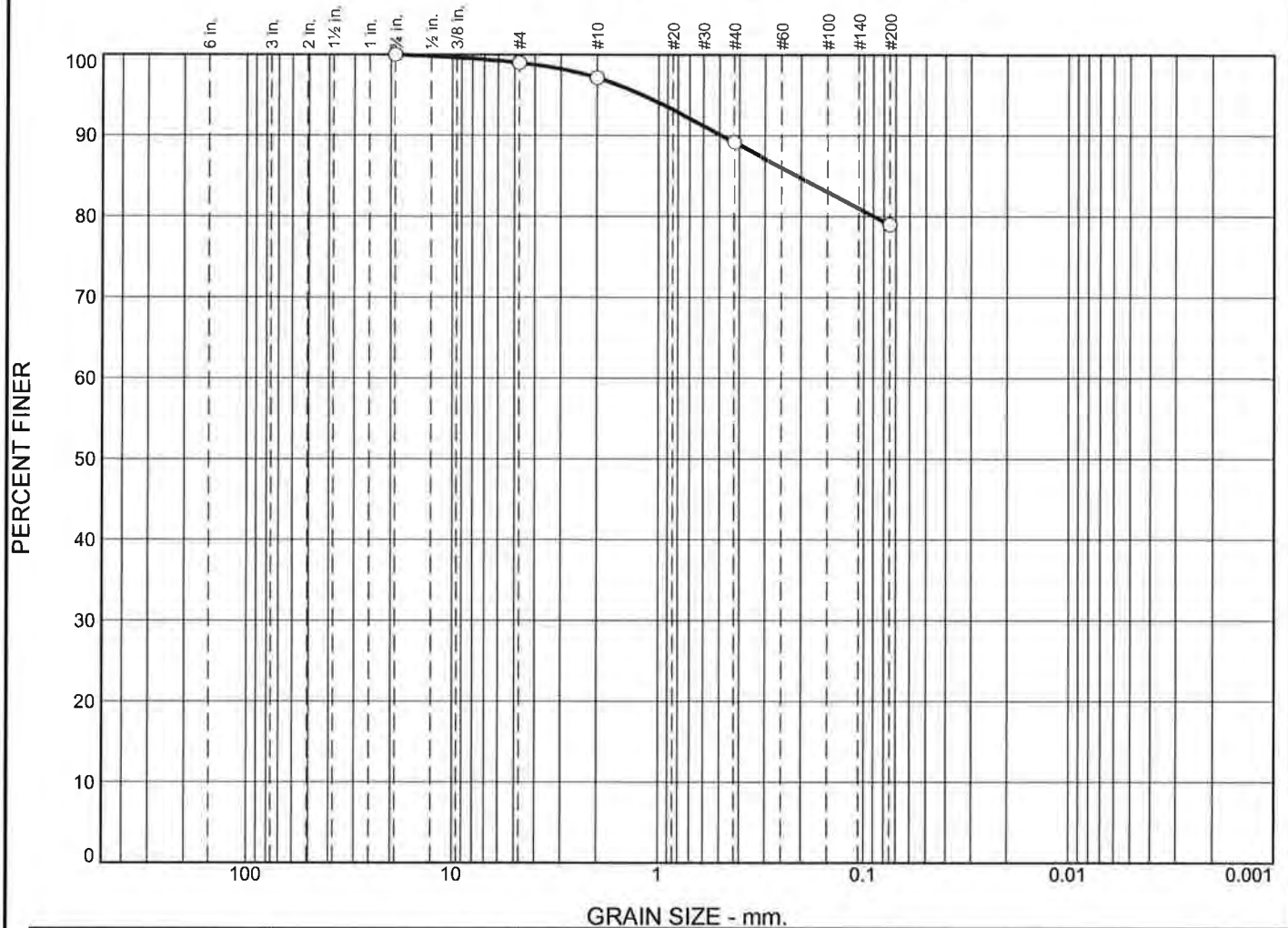
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.8	26.9	68.0	96.7			3.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0874	0.0979	0.1099	0.1387	0.2277	0.2994	0.5871	0.7334	0.9591	1.3739

Fineness Modulus	C _u	C _c
1.34	3.43	0.74

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
0.0	0.0	1.0	1.9	8.0	10.1	79.0				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
				0.2111						

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-D-TOP Sample Number: L1728229-08 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-D-TOP

Sample Number: L1728229-08

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.41

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
25.41	0.00	0.75	0.00	0.00	100.0
		#4	0.26	0.00	99.0
		#10	0.47	0.00	97.1
		#40	2.03	0.00	89.1
		#200	2.58	0.00	79.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.0	1.0	1.9	8.0	10.1	20.0			79.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0894	0.2111	0.4908	1.2000

Fineness Modulus
0.48

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-D-BOTTOM

Sample Number: L1728229-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.58

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
22.58	0.00	0.75	0.00	0.00	100.0
		#4	0.06	0.00	99.7
		#10	0.28	0.00	98.5
		#40	0.92	0.00	94.4
		#200	1.79	0.00	86.5

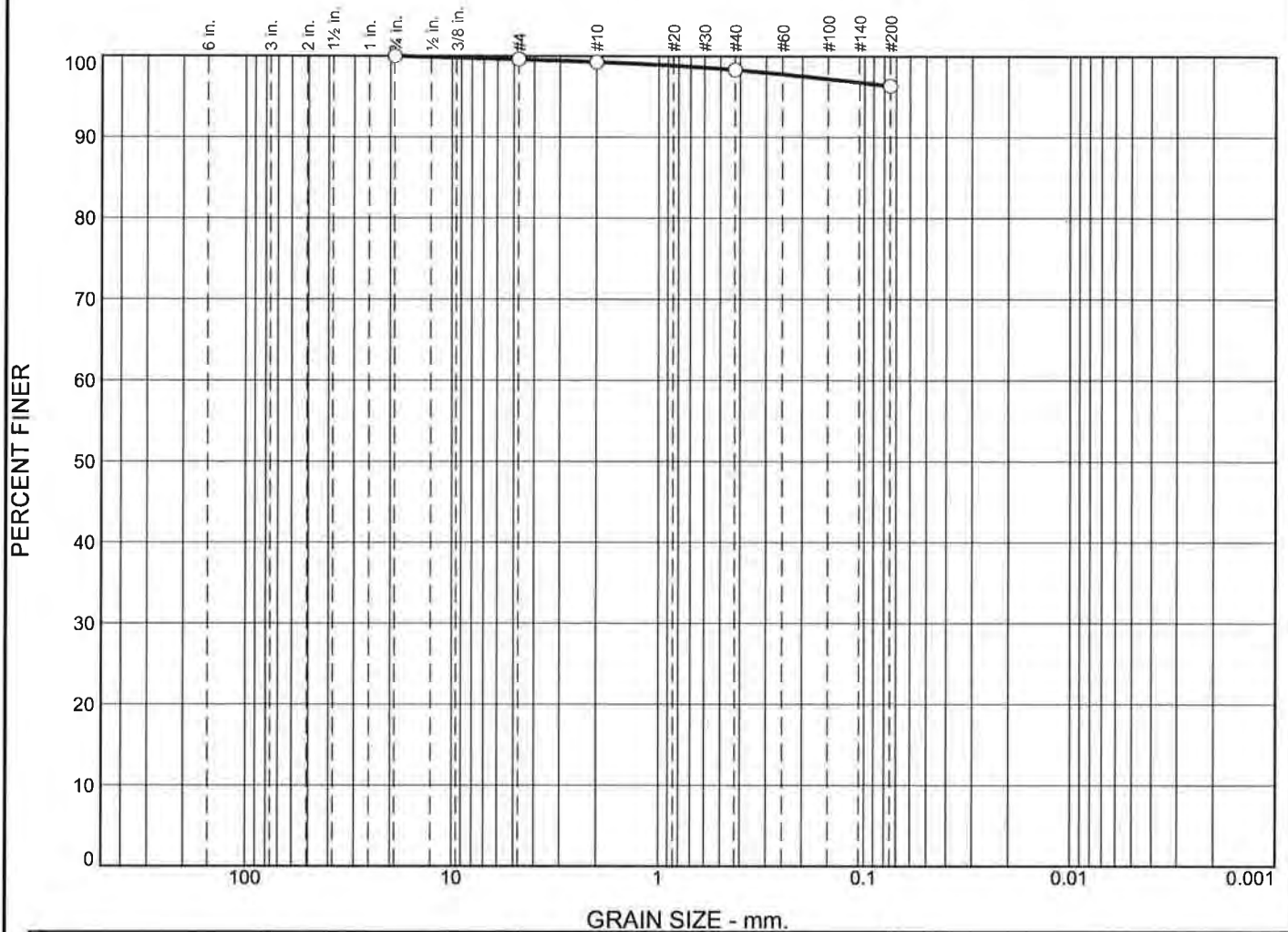
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	1.2	4.1	7.9	13.2			86.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
								0.1522	0.5014

Fineness Modulus
0.26

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.4	0.3	1.0	2.0	96.3			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>											

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-F-TOP Sample Number: L1728229-10 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-F-TOP

Sample Number: L1728229-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.02

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.02	0.00	0.75	0.00	0.00	100.0
		#4	0.08	0.00	99.6
		#10	0.06	0.00	99.3
		#40	0.18	0.00	98.3
		#200	0.38	0.00	96.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.4	0.4	0.3	1.0	2.0	3.3			96.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.08

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-F-REP-TOP

Sample Number: L1728229-11

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.26
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.26	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.17	0.00	99.2
		#40	0.18	0.00	98.3
		#200	0.33	0.00	96.6

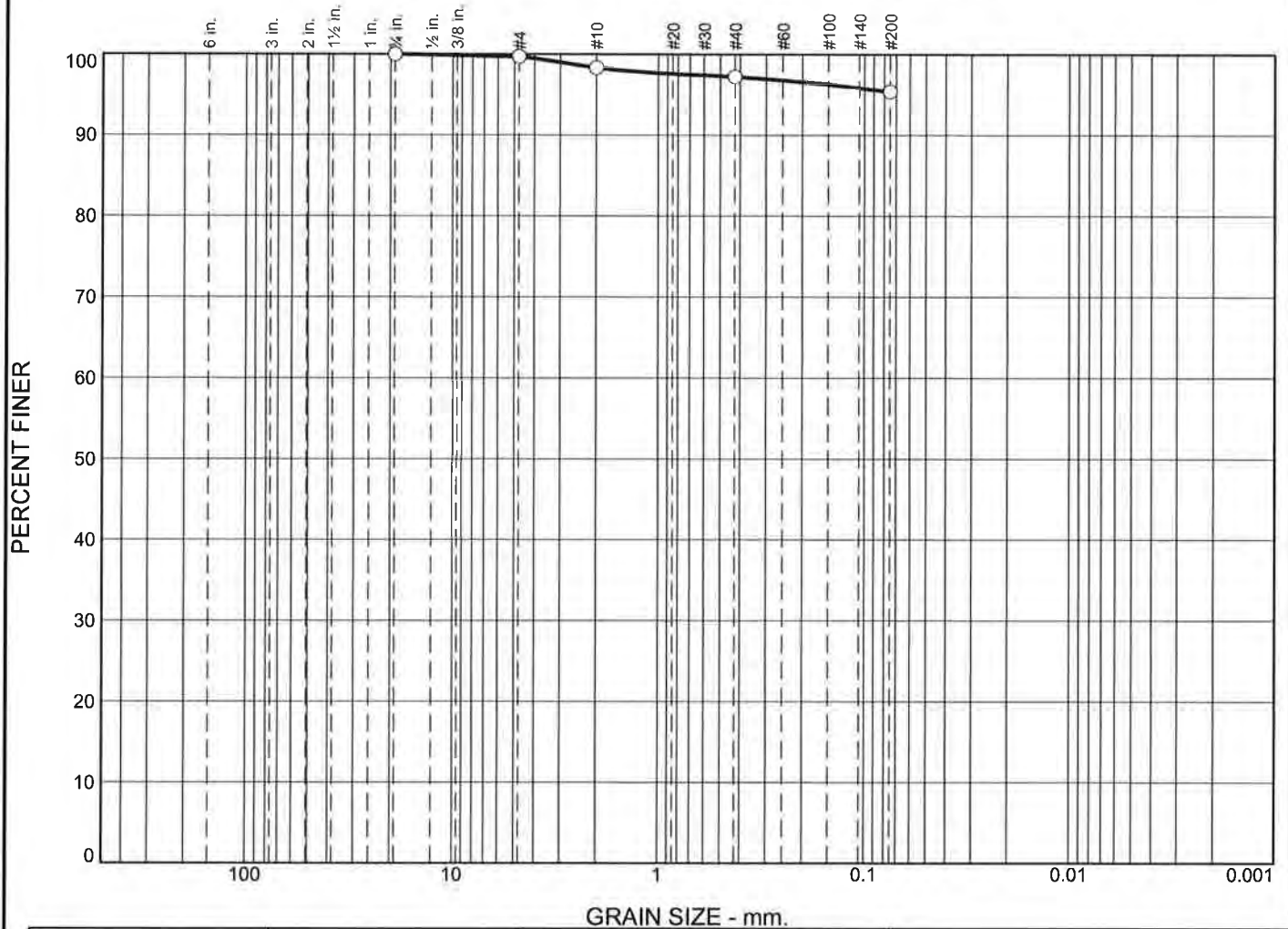
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.8	0.9	1.7	3.4			96.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.08

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.4	1.1	1.8	95.4	

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u

Material Description	USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-F-BOTTOM Sample Number: L1728229-12 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-F-BOTTOM**Sample Number:** L1728229-12**Sieve Test Data****Post #200 Wash Test Weights (grams):** Dry Sample and Tare = 19.78

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.78	0.00	0.75	0.00	0.00	100.0
		#4	0.06	0.00	99.7
		#10	0.27	0.00	98.3
		#40	0.22	0.00	97.2
		#200	0.36	0.00	95.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	1.4	1.1	1.8	4.3			95.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus

0.13

GRAIN SIZE DISTRIBUTION TEST DATA

8/14/2017

Location: NHH-F-BOTTOM

Sample Number: WG1031751-2

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.09

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.09	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.17	0.00	99.1
		#200	0.27	0.00	97.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.9	1.4	2.3			97.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.04

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% fine gravel (53%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

L1728229

Page 1 of 2

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven CT			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number: 60543021			Field Logbook No.:			Gran Size Metals - 602A / 7474 PCBs - 8082 / 8210-SIM Pesticides - 8081B PAHs - 8270D-SIM TOC - 9060						Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:									Lab I.D.		Remarks		
Signature: C. Steve Howe			Send Results/Report to:									TAT:				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered								
NHH-G-Top	8/11/17	0837	X		802/1602	SD	4°C	NA	X	X	X	X	X	X		0-4'3"
NHH-G-Bottom	8/11/17	0837	X		802/1602	SD	4°C		X	X	X	X	X	X		4'3"-13'8"
NHH-C-Top		1033	X		802/1602	SD	4°C		X	X	X	X	X	X		0-2'10"
NHH-C-Bottom		1033	X		802/1602	SD	4°C		X	X	X	X	X	X		2'10"-8'0"
NHH-B		1157	X		Ziploc/1602	SD	4°C		X	X	X	X	X	X		0-4'2"
NHH-B-MS		1157	X		Ziploc/1602	SD	4°C		X	X	X	X	X	X		0-4'2"
NHH-B-MSD		1157	X		Ziploc/1602	SD	4°C		X	X	X	X	X	X		0-4'2"
NHH-A-Top		1340	X		802/1602	SD	4°C		X	X	X	X	X	X		0-2'2"
NHH-A-Bottom		1340	X		802	SD	4°C		X							2'2"-9'9"
NHH-D-Top		1507	X		802/1602	SD	4°C		X	X	X	X	X	X		0-4'9"
NHH-D-Bottom		1507	X		802/1602	SD	4°C		X	X	X	X	X	X		4'9"-10'4"
NHH-F-Top		1650	X		802/1602	SD	4°C		X	X	X	X	X	X		0-3'2"
NHH-F-Rep-Top		1650	X		802/1602	SD	4°C		X	X	X	X	X	X		0-3'2"
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/11/17		Received by: (Print Name)/(Affiliation) Michael AAL			Date: 8/11/17		Analytical Laboratory (Destination):						
Signature: C. Steve Howe			Time: 1925		Signature: Michael AAL			Time: 1925								
Relinquished by: (Print Name)/(Affiliation) A. Smith			Date: 8/11/17		Received by: (Print Name)/(Affiliation) Bethany Becker			Date: 8/11/17								
Signature: A. Smith			Time: 2237		Signature: Bethany Becker			Time: 2237								
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:								
Signature:			Time:		Signature:			Time:								
Sample Shipped Via:										Temp blank						
UPS FedEx Courier Other										Yes No						

CHAIN OF CUSTODY RECORD

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[illegible]



ANALYTICAL REPORT

Lab Number:	L1728340
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	08/15/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728340-01	NHH-E-TOP	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17
L1728340-02	NHH-E-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1032082-1 Laboratory Duplicate RPD for % Total Gravel (133%), performed on L1728340-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 08/15/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

SAMPLE RESULTS

Lab ID: L1728340-01
Client ID: NHH-E-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Coarse Sand	0.800		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Medium Sand	0.400		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Fine Sand	1.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Total Fines	96.8		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

SAMPLE RESULTS

Lab ID: L1728340-02
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Medium Sand	0.400		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Fine Sand	2.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Total Fines	97.6		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1728340
Report Date: 08/15/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1032082-1 QC Sample: L1728340-01 Client ID: NHH-E-TOP						
% Total Gravel	1.00	0.200	%	133	Q	25
% Coarse Sand	0.800	0.800	%	0		25
% Medium Sand	0.400	0.500	%	22		25
% Fine Sand	1.00	1.10	%	10		25
% Total Fines	96.8	97.4	%	1		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:08151716:35
Lab Number: L1728340
Report Date: 08/15/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728340-01A	Plastic 8oz unpreserved for Grain Size	A	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728340-02A	Plastic 8oz unpreserved for Grain Size	A	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

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Report Date: 08/15/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-TOP

Sample Number: 11728340-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.91

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.91	0.00	0.75	0.00	0.00	100.0
		#4	0.20	0.00	99.0
		#10	0.16	0.00	98.2
		#40	0.07	0.00	97.8
		#200	0.21	0.00	96.8

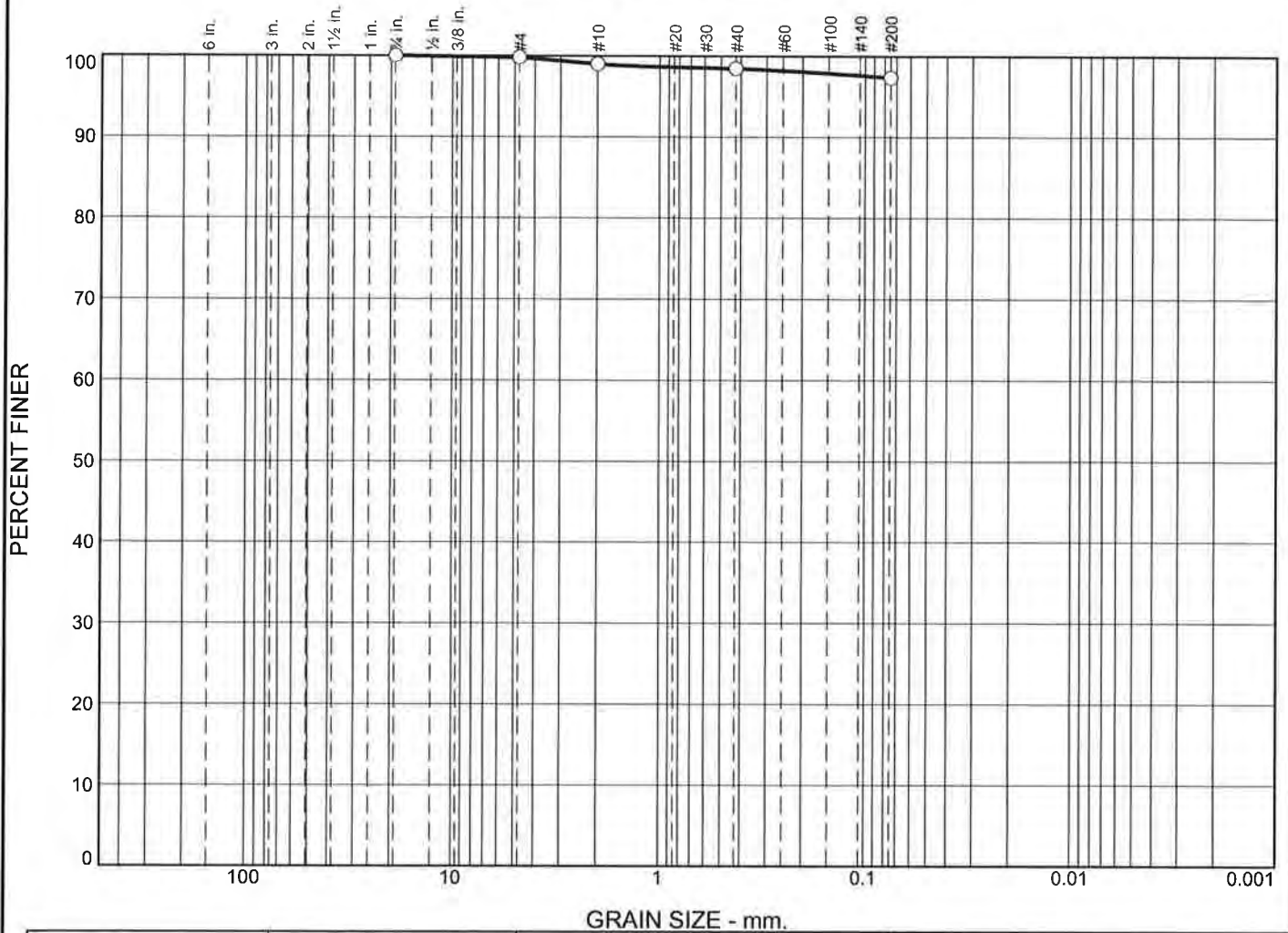
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.0	1.0	0.8	0.4	1.0	2.2			96.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.12

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.2	0.8	0.5	1.1	97.4			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>											

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-E-TOP Sample Number: WG1032082-1 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
---	---	--

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-TOP

Sample Number: WG1032082-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.07

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.07	0.00	0.75	0.00	0.00	100.0
		#4	0.04	0.00	99.8
		#10	0.16	0.00	99.0
		#40	0.11	0.00	98.5
		#200	0.22	0.00	97.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.8	0.5	1.1	2.4			97.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.08

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-BOTTOM

Sample Number: L1728340-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.64

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.64	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.01	0.00	100.0
		#40	0.07	0.00	99.6
		#200	0.43	0.00	97.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	2.0	2.4			97.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.02

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% gravel (133%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.



ANALYTICAL REPORT

Lab Number:	L1728340
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	08/15/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728340-01	NHH-E-TOP	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17
L1728340-02	NHH-E-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1032082-1 Laboratory Duplicate RPD for % Total Gravel (133%), performed on L1728340-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 08/15/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

SAMPLE RESULTS

Lab ID: L1728340-01
Client ID: NHH-E-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Coarse Sand	0.800		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Medium Sand	0.400		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Fine Sand	1.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Total Fines	96.8		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

SAMPLE RESULTS

Lab ID: L1728340-02
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Medium Sand	0.400		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Fine Sand	2.00		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP
% Total Fines	97.6		%	0.100	NA	1	-	08/15/17 12:39	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1728340
Report Date: 08/15/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1032082-1 QC Sample: L1728340-01 Client ID: NHH-E-TOP						
% Total Gravel	1.00	0.200	%	133	Q	25
% Coarse Sand	0.800	0.800	%	0		25
% Medium Sand	0.400	0.500	%	22		25
% Fine Sand	1.00	1.10	%	10		25
% Total Fines	96.8	97.4	%	1		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:08151716:35
Lab Number: L1728340
Report Date: 08/15/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728340-01A	Plastic 8oz unpreserved for Grain Size	A	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1728340-02A	Plastic 8oz unpreserved for Grain Size	A	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728340
Report Date: 08/15/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-TOP

Sample Number: 11728340-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.91

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.91	0.00	0.75	0.00	0.00	100.0
		#4	0.20	0.00	99.0
		#10	0.16	0.00	98.2
		#40	0.07	0.00	97.8
		#200	0.21	0.00	96.8

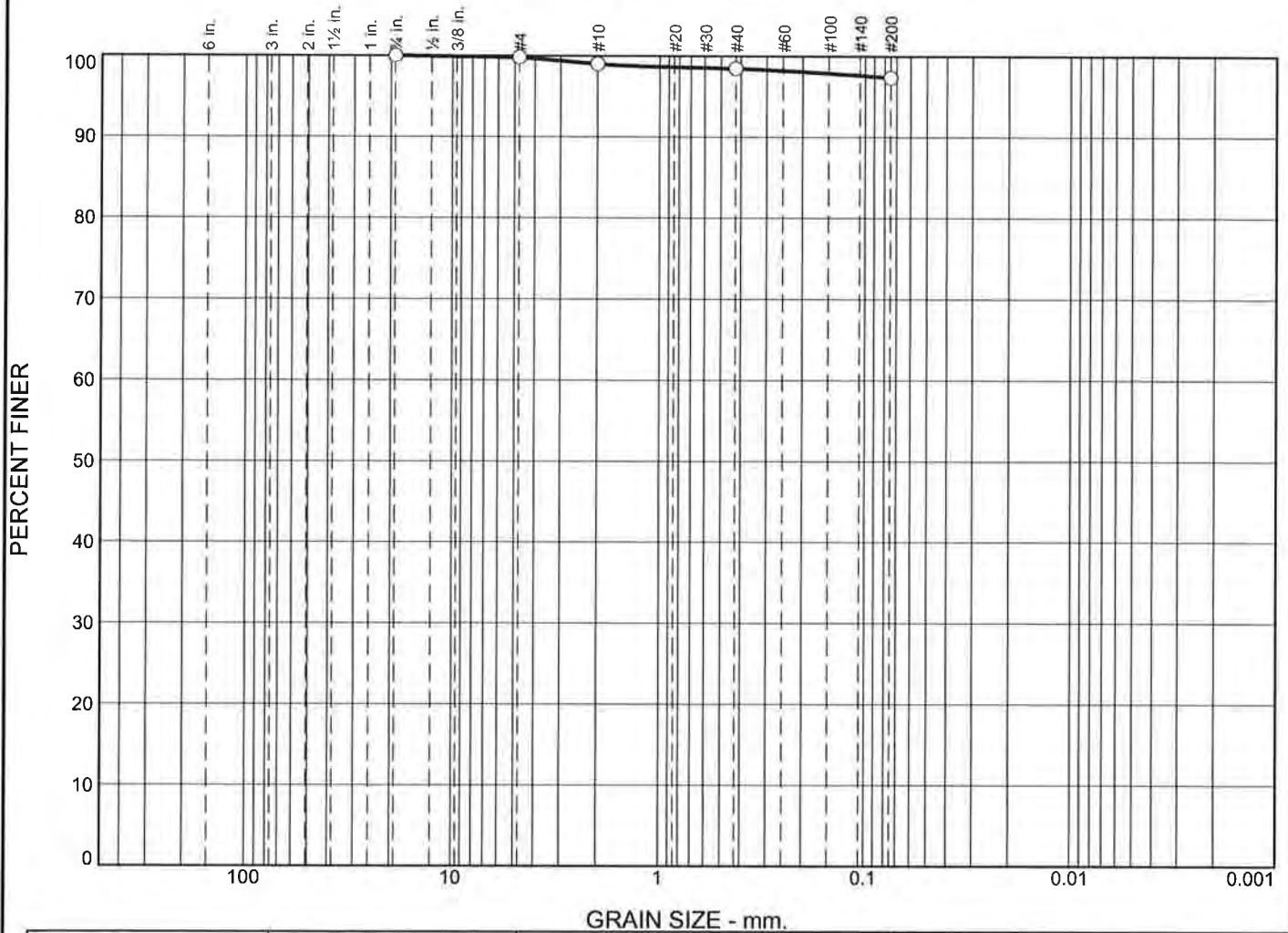
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.0	1.0	0.8	0.4	1.0	2.2			96.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.12

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"	% Gravel		% Sand			% Fines					
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay				
0.0	0.0	0.2	0.8	0.5	1.1	97.4					
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="checkbox"/>											
Material Description									USCS		AASHTO
Project No. Client:									Remarks:		
Project:											
Source of Sample: NHH-E-TOP Sample Number: WG1032082-1											
Date: <input type="checkbox"/>											
Alpha Analytical									Figure		
Mansfield, MA											

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-TOP

Sample Number: WG1032082-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.07

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.07	0.00	0.75	0.00	0.00	100.0
		#4	0.04	0.00	99.8
		#10	0.16	0.00	99.0
		#40	0.11	0.00	98.5
		#200	0.22	0.00	97.4

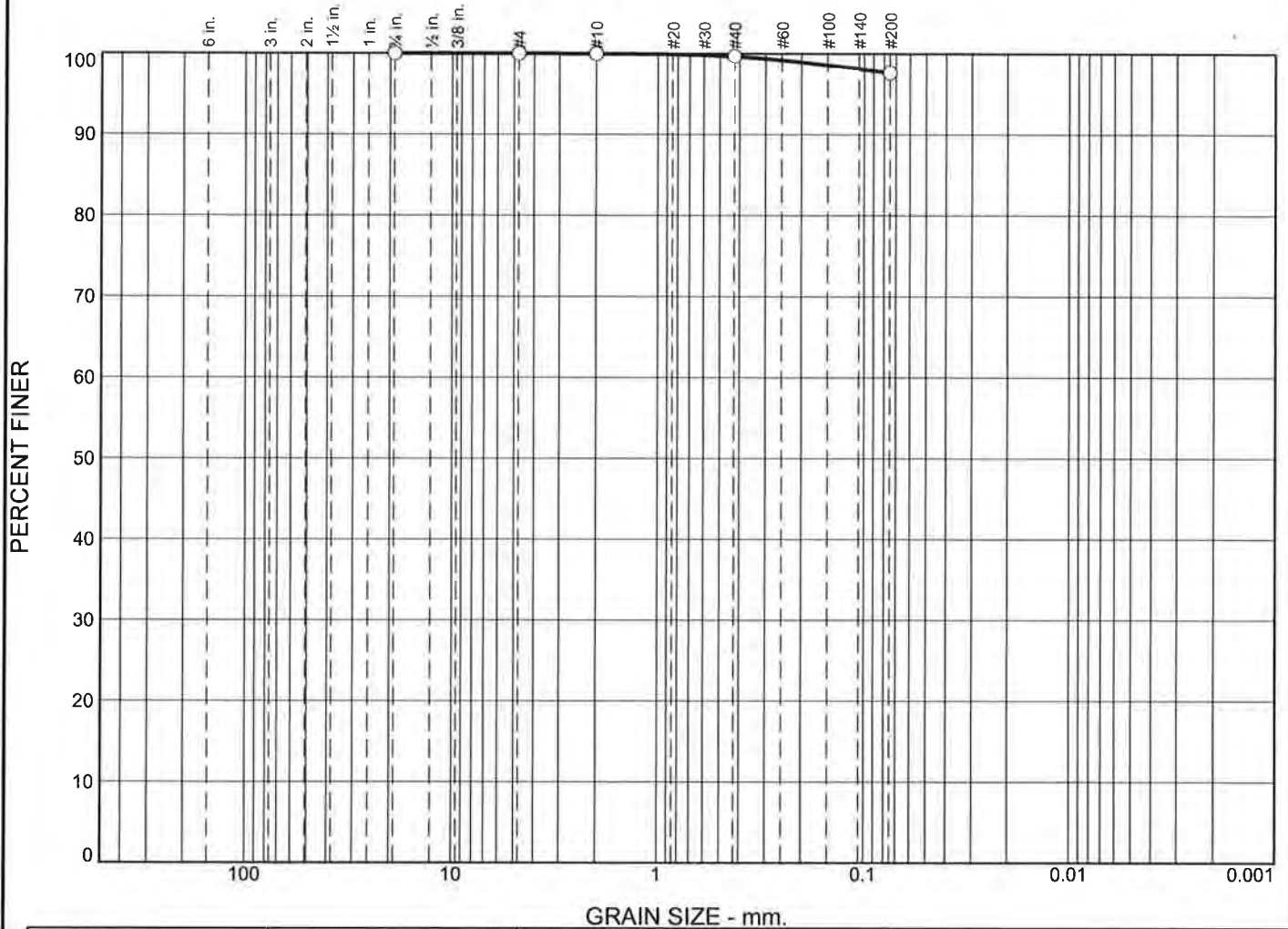
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.8	0.5	1.1	2.4			97.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.08

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"	% Gravel		% Sand			% Fines					
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay				
0.0	0.0	0.0	0.0	0.4	2.0	97.6					
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="checkbox"/>											
<input type="checkbox"/>											

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-E-BOTTOM Sample Number: L1728340-02 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

8/15/2017

Location: NHH-E-BOTTOM

Sample Number: L1728340-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.64

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.64	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.01	0.00	100.0
		#40	0.07	0.00	99.6
		#200	0.43	0.00	97.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	2.0	2.4			97.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅

Fineness Modulus
0.02

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% gravel (133%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

Hydrometer Grain Size Results (ASTM D7928)



ANALYTICAL REPORT

Lab Number:	L1731354
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	09/28/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1731354

Report Date: 09/28/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731354-01	NHH-X-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1731354-02	NHH-X-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1731354-03	NHH-X-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1731354-04	NHH-Y-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 10:37	08/08/17
L1731354-05	NHH-Y-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 10:37	08/08/17
L1731354-06	NHH-Z-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1731354-07	NHH-Z-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1731354-08	NHH-N-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 13:05	08/08/17
L1731354-09	NHH-N-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 13:05	08/08/17
L1731354-10	NHH-O-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 14:45	08/08/17
L1731354-11	NHH-O-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 14:45	08/08/17
L1731354-12	NHH-M	SEDIMENT	NEW HAVEN, CT	08/08/17 16:10	08/08/17
L1731354-13	NHH-T-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17
L1731354-14	NHH-T-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17
L1731354-15	NHH-U-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1731354-16	NHH-U-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1731354-17	NHH-P-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/09/17
L1731354-18	NHH-P-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/09/17
L1731354-19	NHH-Q-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1731354-20	NHH-Q-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1731354-21	NHH-W-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 16:34	08/09/17
L1731354-22	NHH-W-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 16:34	08/09/17
L1731354-23	NHH-V-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17
L1731354-24	NHH-V-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731354-25	NHH-R-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17
L1731354-26	NHH-R-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Grain Size

The WG1046269-1 Laboratory Duplicate RPD for % Clay fine (156%), performed on L1731354-08, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 09/28/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-01
Client ID: NHH-X-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.800		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	6.90		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	7.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	83.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	8.90		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	92.3		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-02
Client ID: NHH-X-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.700		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	7.10		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	7.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	82.6		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	9.60		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	92.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-03
Client ID: NHH-X-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	0.200		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	13.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	50.8		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	64.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	21.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	14.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	35.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-04
Client ID: NHH-Y-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 10:37
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.900		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	3.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	4.60		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	93.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	95.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-05
Client ID: NHH-Y-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 10:37
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	9.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	9.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	12.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	66.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	79.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	10.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	0.100		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	10.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-06
Client ID: NHH-Z-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.800		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	4.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	4.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	93.8		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	1.40		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	95.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-07
Client ID: NHH-Z-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.900		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	19.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	20.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	79.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	1.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	80.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-08
Client ID: NHH-N-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 13:05
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	3.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	3.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	5.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	26.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	23.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	55.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	38.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	2.40		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	40.6		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-09
Client ID: NHH-N-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 13:05
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	2.20		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	82.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	84.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	15.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	0.100		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	15.3		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-10
Client ID: NHH-O-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 14:45
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.600		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	2.30		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	88.8		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	8.90		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	97.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-11
Client ID: NHH-O-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 14:45
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	0.200		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	1.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	74.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	75.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	24.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	0.200		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	24.6		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-12
Client ID: NHH-M
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 16:10
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.500		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	2.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	52.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	46.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	98.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-13
Client ID: NHH-T-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	1.00		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	81.8		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	17.2		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	99.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-14
Client ID: NHH-T-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.700		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.40		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	2.10		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	62.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	35.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	97.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-15
Client ID: NHH-U-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	0.100		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.300		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.10		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	63.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	35.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	98.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-16
Client ID: NHH-U-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	0.100		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	1.40		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	3.20		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	4.70		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	75.4		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	19.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	95.3		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-17
Client ID: NHH-P-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.400		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	1.90		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	96.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	1.20		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	98.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-18
Client ID: NHH-P-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.200		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.30		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	1.50		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	92.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	5.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	98.5		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-19
Client ID: NHH-Q-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	0.200		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	0.900		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	1.10		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	82.0		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	16.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	98.9		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-20
Client ID: NHH-Q-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Coarse Sand	0.100		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Medium Sand	1.30		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Fine Sand	1.80		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Sand	3.20		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Silt Fine	84.7		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Clay Fine	12.1		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP
% Total Fines	96.8		%	0.100	NA	1	-	09/27/17 16:25	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-21
Client ID: NHH-W-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	3.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	48.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	53.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	35.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	11.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	46.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-22
Client ID: NHH-W-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	0.100		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	69.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	69.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	27.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	2.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	30.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-23
Client ID: NHH-V-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	4.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	4.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	8.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	5.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	4.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	18.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	58.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	18.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	76.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-24
Client ID: NHH-V-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	1.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	1.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	4.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	3.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	3.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	10.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	65.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	23.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	88.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-25
Client ID: NHH-R-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.200		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.200		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	6.30		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	6.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	6.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	18.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	52.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	28.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	81.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

SAMPLE RESULTS

Lab ID: L1731354-26
Client ID: NHH-R-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	1.70		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	4.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	8.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	68.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	23.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	91.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1731354

Report Date: 09/28/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1046269-1 QC Sample: L1731354-08 Client ID: NHH-N-TOP						
% Coarse Gravel	ND	ND	%	NC		25
% Fine Gravel	3.70	ND	%	NC		25
% Total Gravel	3.70	ND	%	NC		25
% Coarse Sand	5.80	7.10	%	20		25
% Medium Sand	26.0	27.3	%	5		25
% Fine Sand	23.9	24.4	%	2		25
% Total Sand	55.7	58.8	%	5		25
% Silt Fine	38.2	40.9	%	7		25
% Clay Fine	2.40	0.300	%	156	Q	25
% Total Fines	40.6	41.2	%	1		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 09281717:18
Lab Number: L1731354
Report Date: 09/28/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
A1	Absent
A2	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731354-01A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIM FORMS(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-02A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-03A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-04A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-05A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:09281717:18
Lab Number: L1731354
Report Date: 09/28/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731354-06A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-07A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-08A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-08B	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-08C	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-09A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-10A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:09281717:18
Lab Number: L1731354
Report Date: 09/28/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731354-11A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-12A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-13A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-14A	Plastic 8oz unpreserved for Grain Size	A	NA		5.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-15A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-16A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-17A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:09281717:18
Lab Number: L1731354
Report Date: 09/28/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731354-18A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-19A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-20A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-21A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-22A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-23A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-24A	Plastic 8oz unpreserved for Grain Size	A1	NA		5.6	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 09281717:18
Lab Number: L1731354
Report Date: 09/28/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731354-25A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731354-26A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731354
Report Date: 09/28/17

REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	0.0	0.0	0.8	6.9	83.4		8.9	
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.0694	0.0551	0.0503	0.0408	0.0128	0.0104	2.89	5.28

Material Description

USCS

AASHTO

Project No.

Client:

Remarks:

Project:

Source of Sample: NHH-X-TOP

Sample Number: L1731354-01

Date: ○

Alpha Analytical

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-X-TOP

Sample Number: L1731354-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.67

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.67	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.15	0.00	99.2
		#200	1.37	0.00	92.3

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 92.3

Weight of hydrometer sample = 19.67

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	23.9
5.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0238	16.4
15.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0137	16.4
30.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0098	8.9
60.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0069	8.9
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	8.9
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	8.9

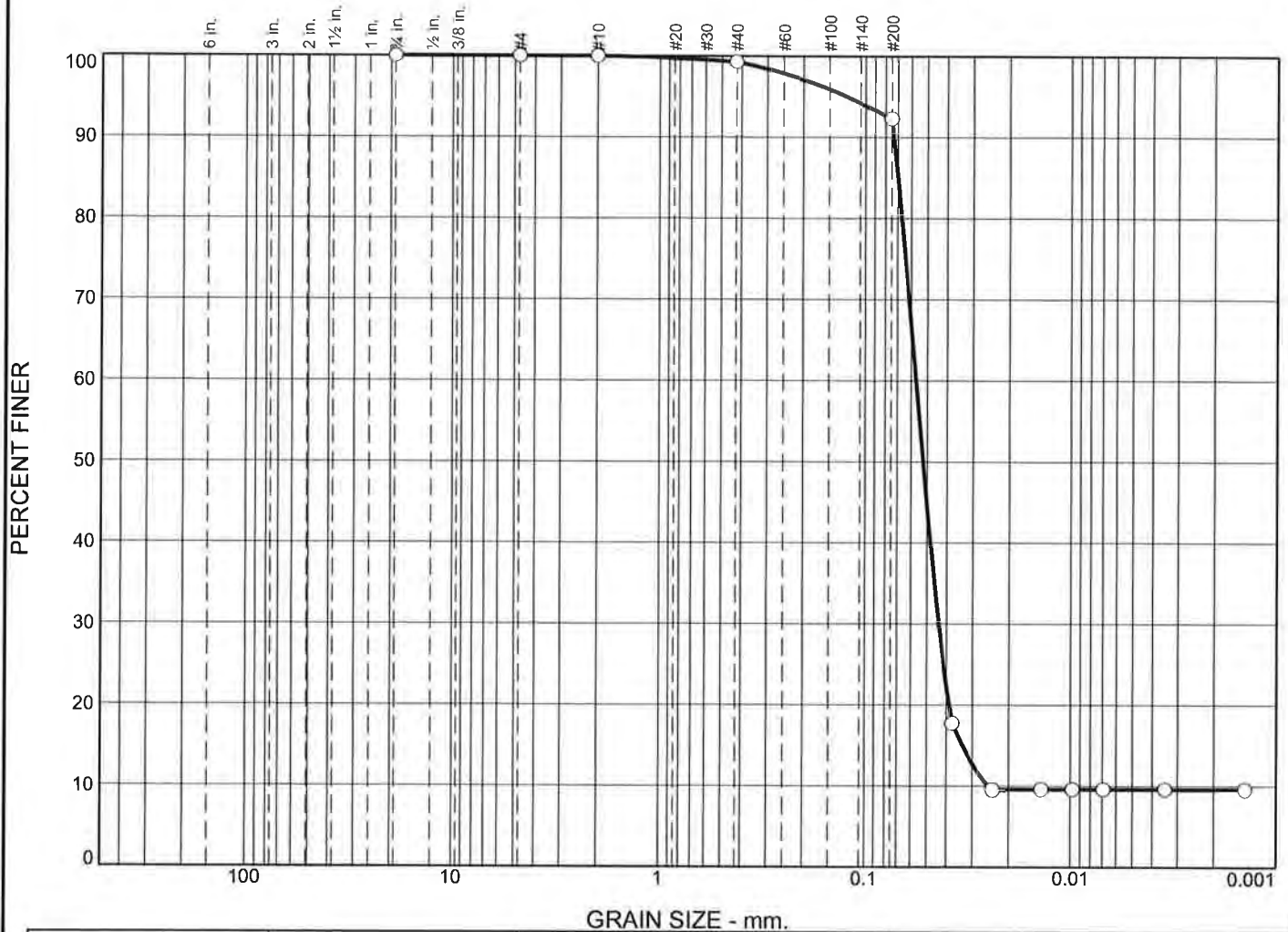
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	6.9	7.7	83.4	8.9	92.3

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0104	0.0128	0.0309	0.0408	0.0457	0.0503	0.0551	0.0661	0.0694	0.0731	0.1251

Fineness Modulus	C _u	C _c
0.06	5.28	2.89

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-X-REP-TOP

Sample Number: L1731354-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 18.19
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
18.19	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.13	0.00	99.3
		#200	1.28	0.00	92.2

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 92.2
 Weight of hydrometer sample = 18.19
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0376	17.7
5.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0240	9.6
15.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0138	9.6
30.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0098	9.6
60.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0069	9.6
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	9.6
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	9.6

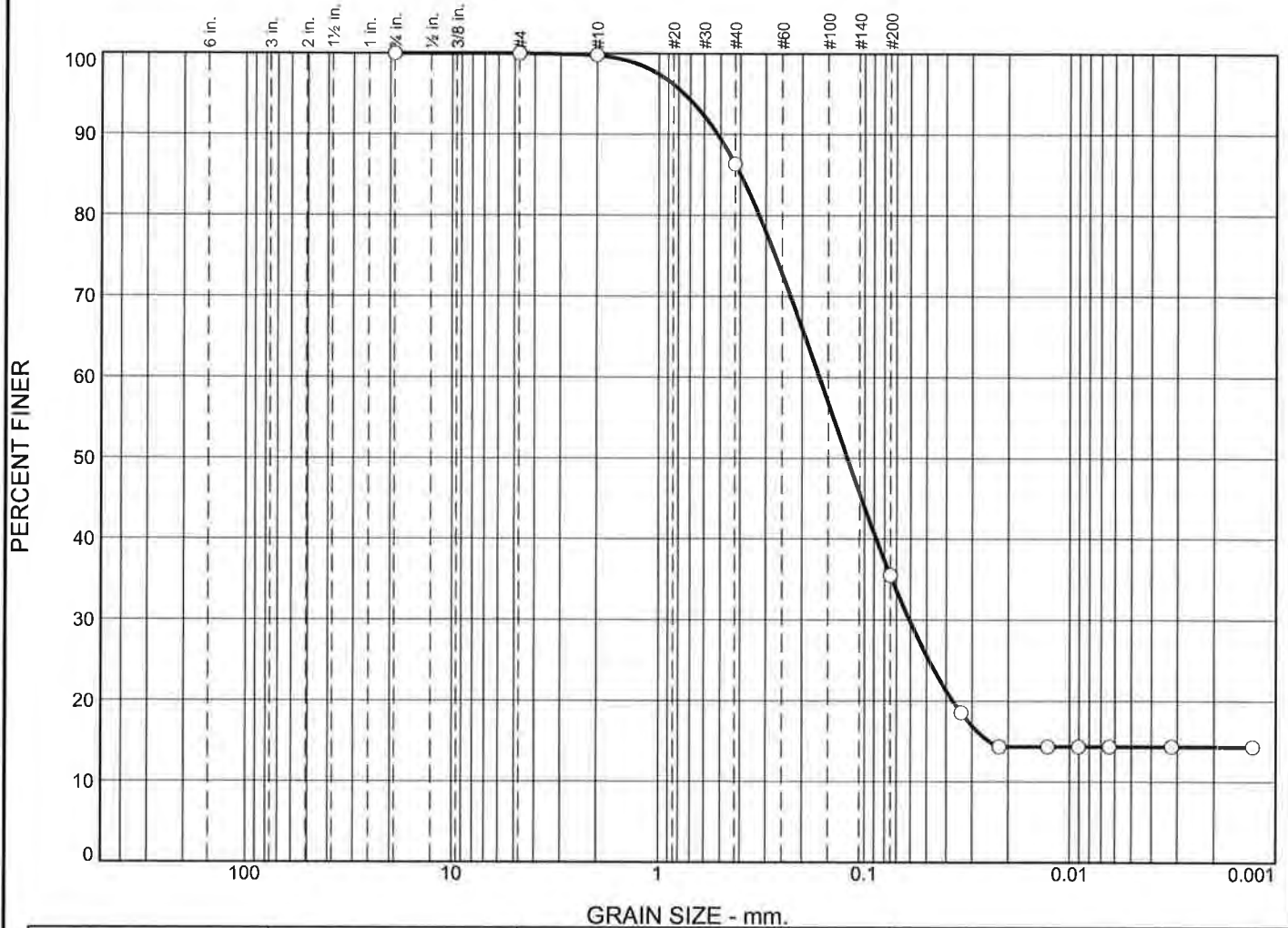
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	7.1	7.8	82.6	9.6	92.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0249	0.0336	0.0389	0.0437	0.0481	0.0523	0.0568	0.0669	0.0700	0.0733	0.1249

Fineness Modulus	C _u	C _c
0.06	2.28	1.35

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0		0.0	13.5	50.8	21.1		14.4	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.3992	0.1657	0.1214	0.0606	0.0246			

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-X-BOTTOM Sample Number: L1731354-03 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-X-BOTTOM

Sample Number: L1731354-03

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 40.43

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
40.43	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.08	0.00	99.8
		#40	5.44	0.00	86.3
		#200	20.55	0.00	35.5

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 35.5

Weight of hydrometer sample = 40.43

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	R _m	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0130	1.0132	0.0134	13.0	12.9	0.0340	18.6
5.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0221	14.4
15.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0128	14.4
30.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0090	14.4
60.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0064	14.4
240.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0032	14.4
1440.00	21.5	1.0100	1.0102	0.0134	10.0	13.6	0.0013	14.4

Fractional Components

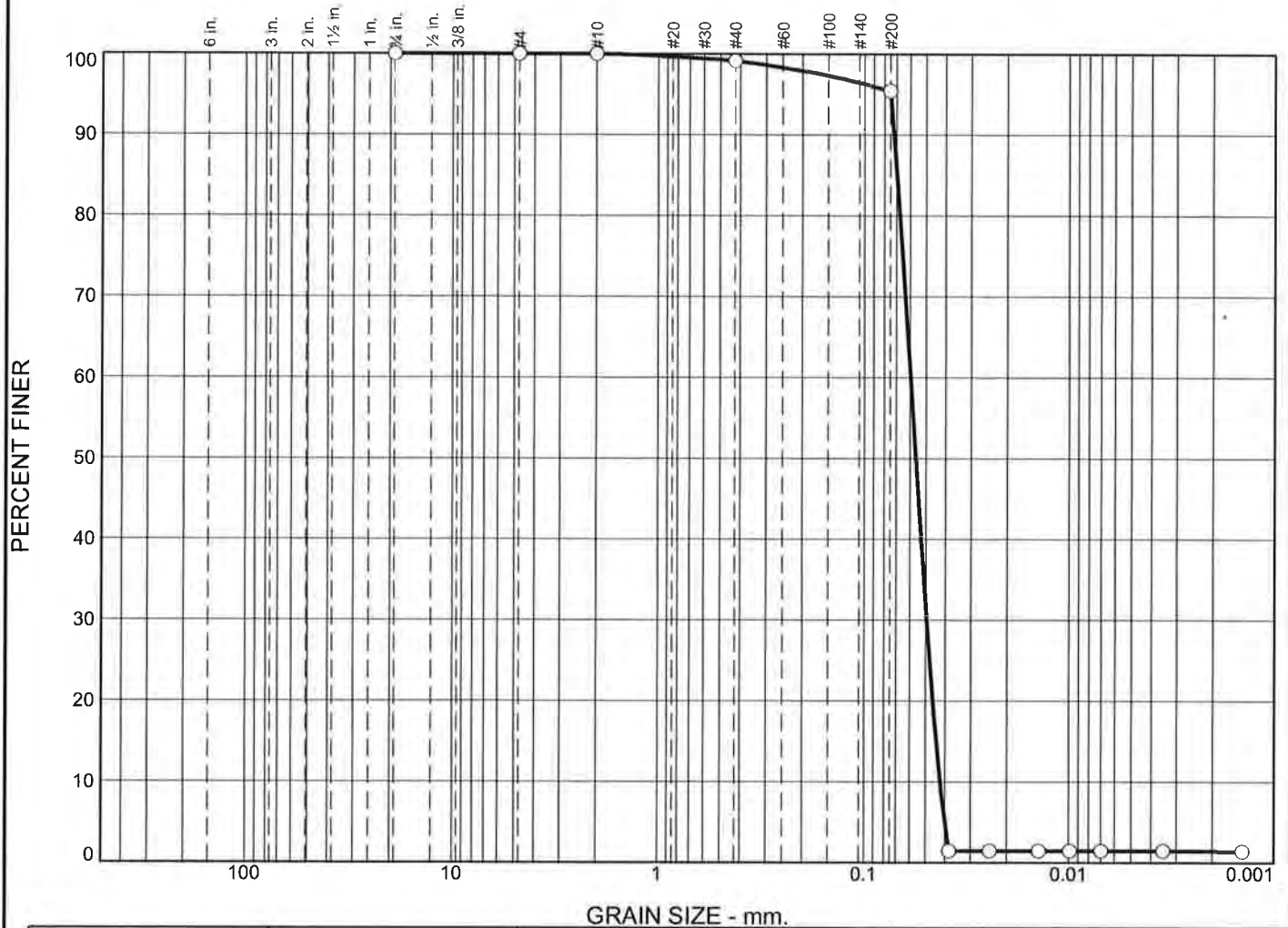
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	13.5	50.8	64.5	21.1	14.4	35.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0246	0.0372	0.0606	0.0878	0.1214	0.1657	0.3244	0.3992	0.5163	0.7480

Fineness Modulus

0.75

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel			% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	0.0	0.0	0.9	3.7	93.9		1.5	
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.0697	0.0596	0.0561	0.0494	0.0442	0.0423	0.97	1.41

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-Y-TOP Sample Number: L1731354-04 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Y-TOP

Sample Number: L1731354-04

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 18.61
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
18.61	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.16	0.00	99.1
		#200	0.69	0.00	95.4

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 95.4
 Weight of hydrometer sample = 18.61
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	1.5
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	1.5
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	1.5
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	1.5
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	1.5
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	1.5
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	1.5

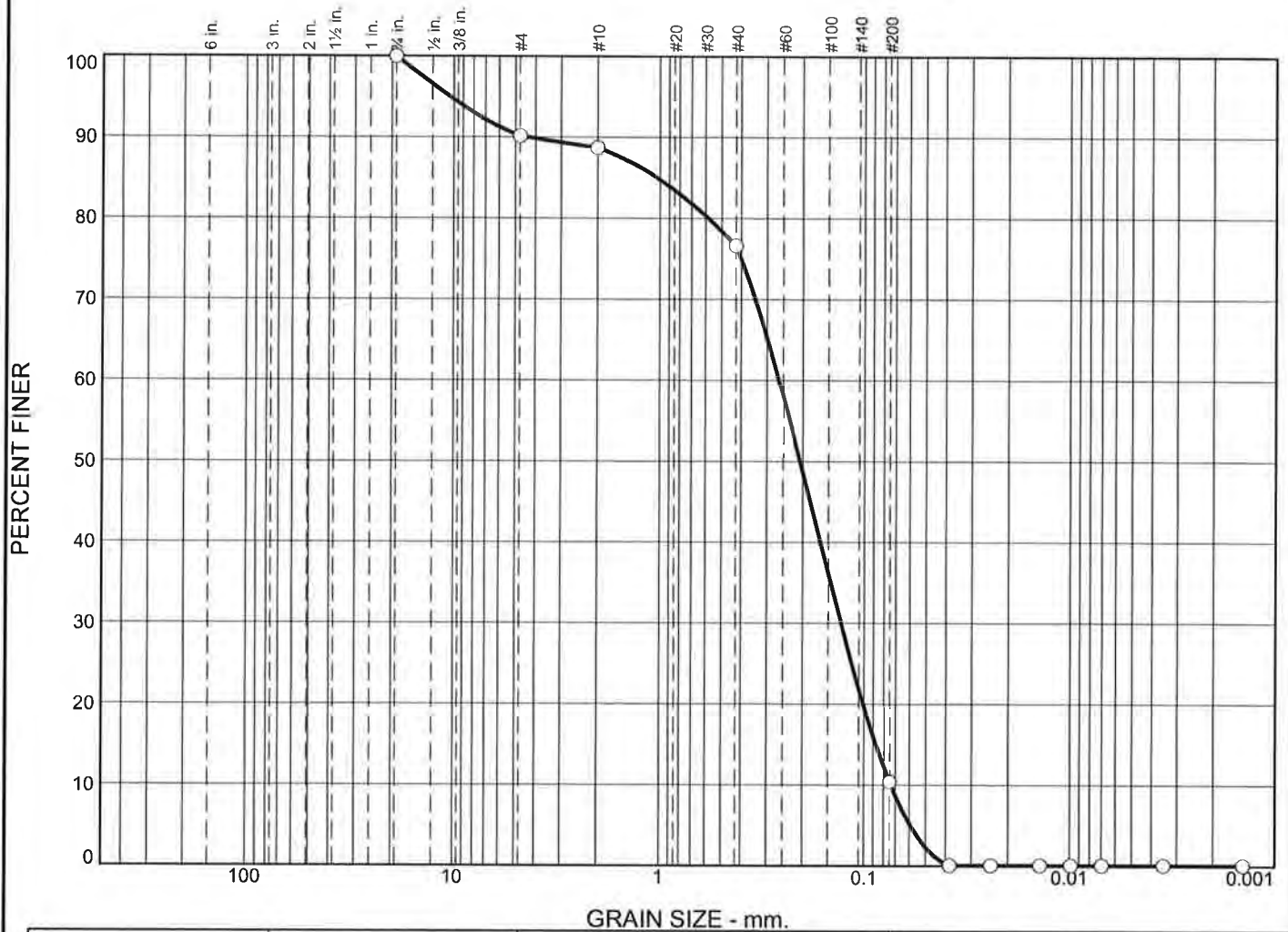
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.9	3.7	4.6	93.9	1.5	95.4

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0401	0.0423	0.0442	0.0460	0.0494	0.0527	0.0561	0.0596	0.0674	0.0697	0.0721	0.0748

Fineness Modulus	C _u	C _c
0.05	1.41	0.97

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	9.8	1.5	12.1	66.1	10.4		0.1	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.0338	0.2623	0.2066	0.1299	0.0872	0.0738	0.87	3.56

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-Y-BOTTOM Sample Number: L1731354-05 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Y-BOTTOM

Sample Number: L1731354-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 43.25
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
43.25	0.00	0.75	0.00	0.00	100.0
		#4	4.26	0.00	90.2
		#10	0.64	0.00	88.7
		#40	5.23	0.00	76.6
		#200	28.60	0.00	10.5

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 10.5
 Weight of hydrometer sample = 43.25
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	0.1
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.1
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.1
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.1
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.1
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.1
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.1

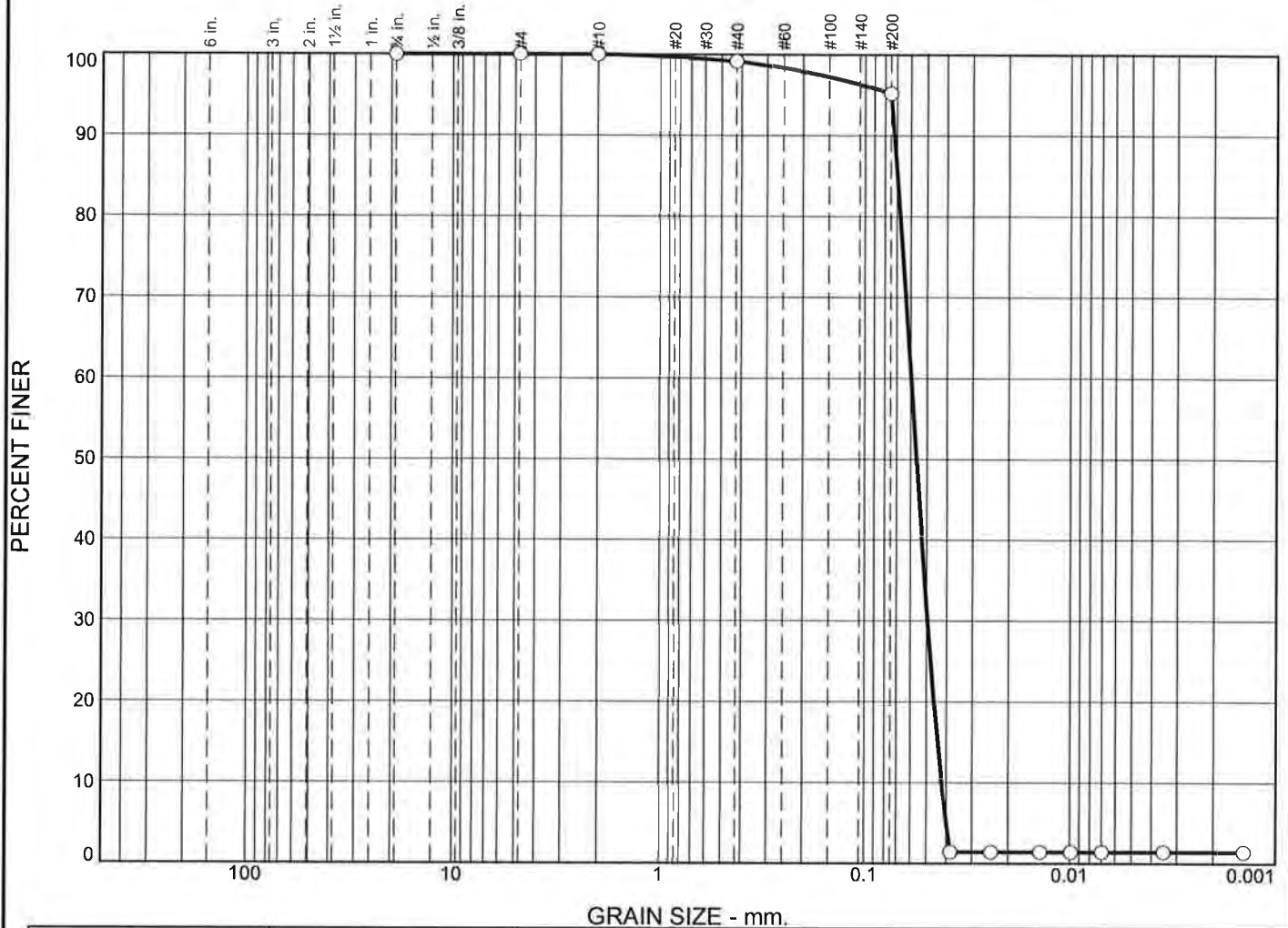
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	9.8	9.8	1.5	12.1	66.1	79.7	10.4	0.1	10.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0592	0.0738	0.0872	0.1008	0.1299	0.1642	0.2066	0.2623	0.5813	1.0338	4.3505	10.4352

Fineness Modulus	C _u	C _c
1.59	3.56	0.87

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	0.0	0.0	0.8	4.0	93.8	1.4		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>				0.0698	0.0596	0.0561	0.0494	0.0442	0.0423	0.97

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-Z-TOP Sample Number: L1731354-06 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Z-TOP

Sample Number: L1731354-06

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.28
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
19.28	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.16	0.00	99.2
		#200	0.76	0.00	95.2

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 95.2

Weight of hydrometer sample = 19.28

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	1.4
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	1.4
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	1.4
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	1.4
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	1.4
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	1.4
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	1.4

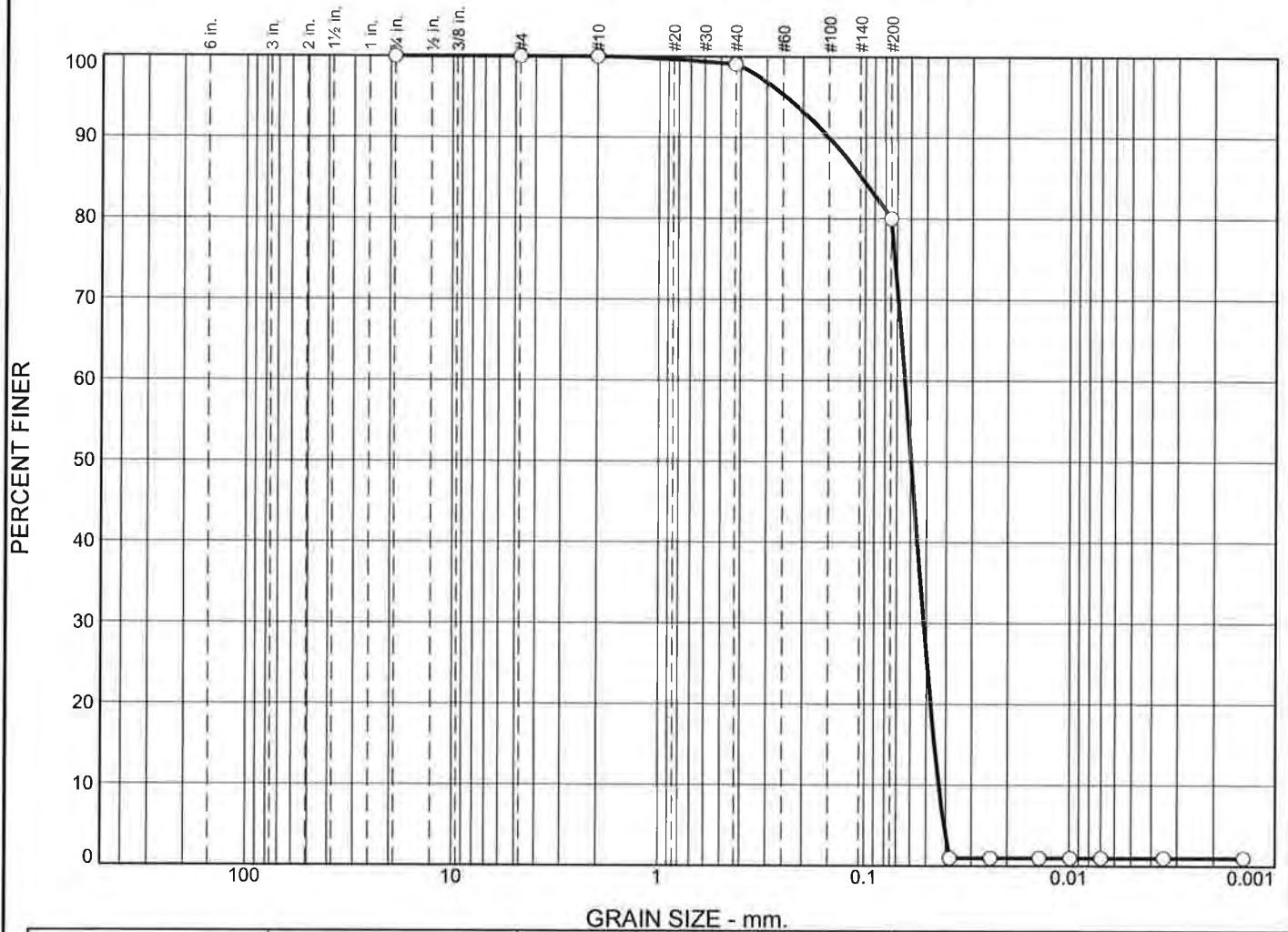
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	4.0	4.8	93.8	1.4	95.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0401	0.0423	0.0442	0.0460	0.0494	0.0527	0.0561	0.0596	0.0675	0.0698	0.0722	0.0749

Fineness Modulus	C _u	C _c
0.05	1.41	0.97

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel			% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	0.0	0.0	0.9	19.1	79.0		1.0	
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.1037	0.0641	0.0597	0.0515	0.0454	0.0432	0.96	1.48

Material Description								USCS	AASHTO

Project No. Client:
 Project:
 Source of Sample: NHH-Z-BOTTOM Sample Number: L1731354-07

Remarks:

Date: ○

Alpha Analytical

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Z-BOTTOM

Sample Number: L1731354-07

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.58
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.58	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.22	0.00	99.1
		#200	4.50	0.00	80.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 80.0
 Weight of hydrometer sample = 23.58
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	1.0
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	1.0
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	1.0
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	1.0
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	1.0
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	1.0
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	1.0

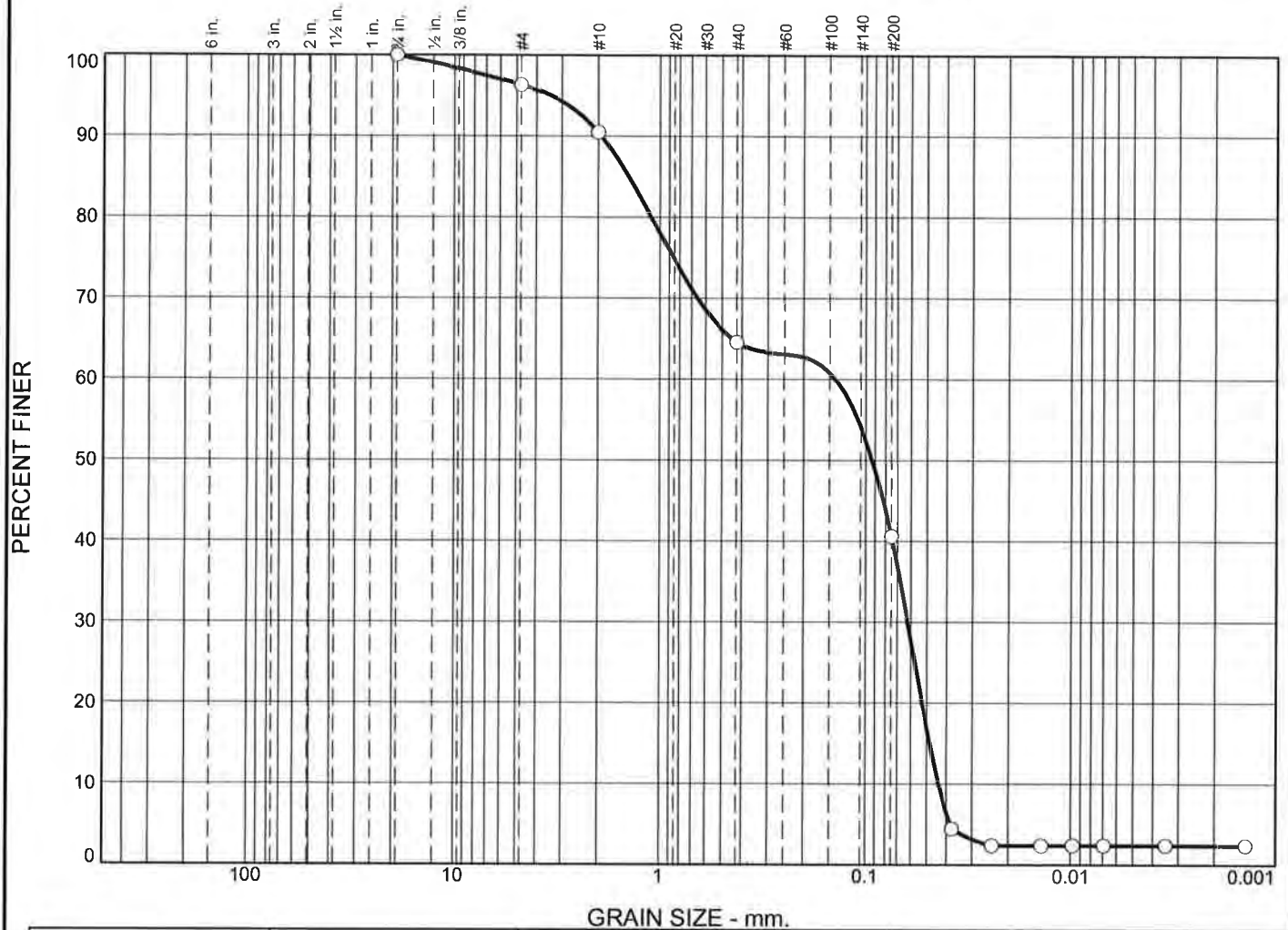
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.9	19.1	20.0	79.0	1.0	80.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0407	0.0432	0.0454	0.0475	0.0515	0.0555	0.0597	0.0641	0.0751	0.1037	0.1513	0.2431

Fineness Modulus	C _u	C _c
0.14	1.48	0.96

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel			% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	3.7	5.8	26.0	23.9	38.2		2.4	
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				1.4255	0.1415	0.0930	0.0623	0.0484	0.0438	0.63	3.23

Material Description								USCS	AASHTO

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-N-TOP Sample Number: L1731354-08 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-N-TOP

Sample Number: L1731354-08

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 31.86
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
31.86	0.00	0.75	0.00	0.00	100.0
		#4	1.19	0.00	96.3
		#10	1.85	0.00	90.5
		#40	8.26	0.00	64.5
		#200	7.62	0.00	40.6

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 40.6
 Weight of hydrometer sample = 31.86
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0376	4.5
5.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0240	2.4
15.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0138	2.4
30.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0098	2.4
60.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0069	2.4
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	2.4
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	2.4

Fractional Components

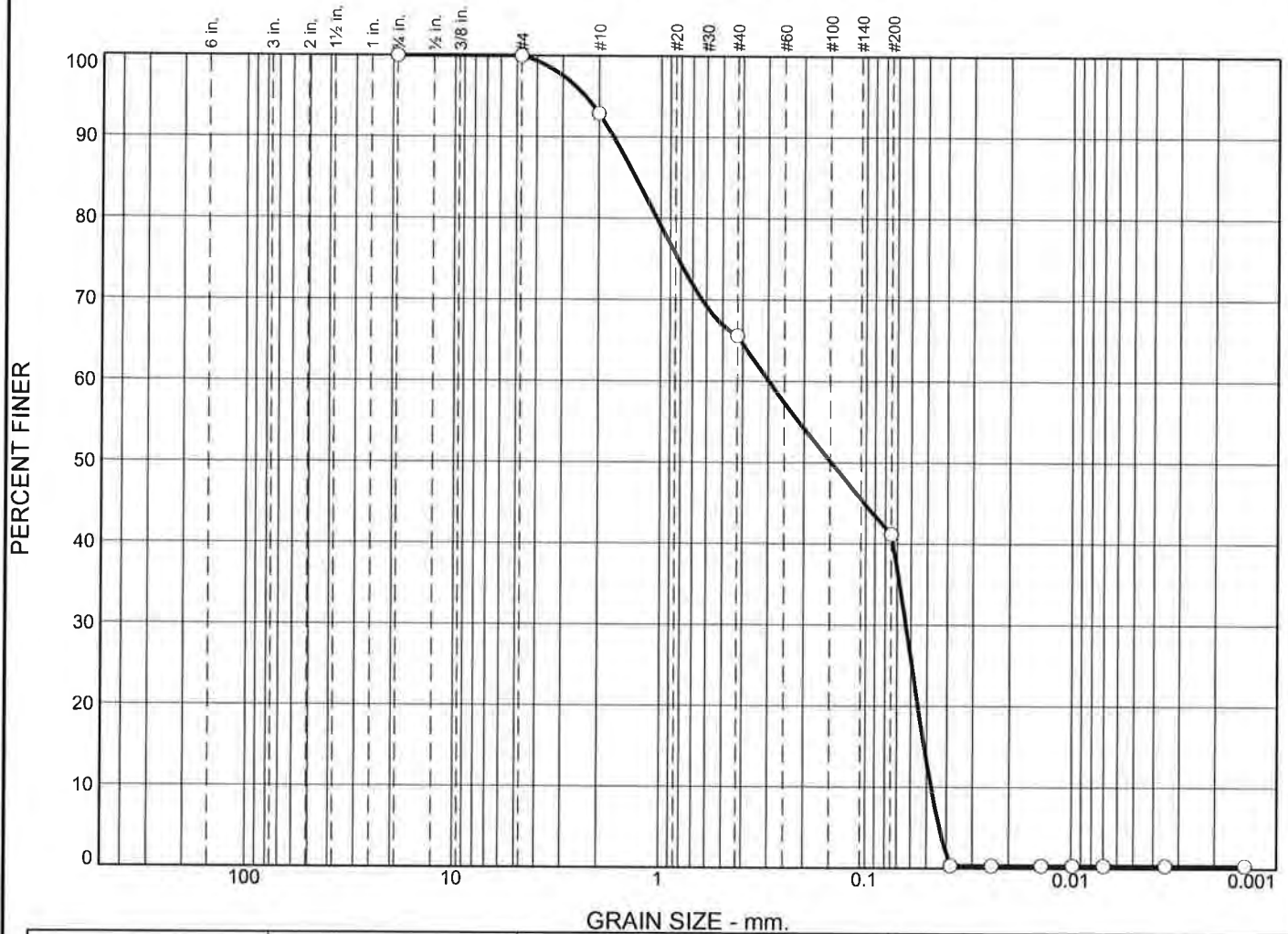
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.7	3.7	5.8	26.0	23.9	55.7	38.2	2.4	40.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0384	0.0438	0.0484	0.0528	0.0623	0.0741	0.0930	0.1415	1.1031	1.4255	1.9330	3.4267

Fineness Modulus	C _u	C _c
1.39	3.23	0.63

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	7.1	27.3	24.4	40.9		0.3	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.3166	0.2974	0.1486	0.0635	0.0513	0.0474	0.29	6.27

Material Description

USCS

AASHTO

Project No.

Client:

Project:

Source of Sample: NHH-N-TOP

Sample Number: WG1046269-1

Date: ☐

Alpha Analytical

Mansfield, MA

Remarks:

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-N-TOP

Sample Number: WG1046269-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.14
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
34.14	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	2.43	0.00	92.9
		#40	9.33	0.00	65.6
		#200	8.32	0.00	41.2

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 41.2

Weight of hydrometer sample = 34.14

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	0.3
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.3
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.3
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.3
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.3
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.3
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.3

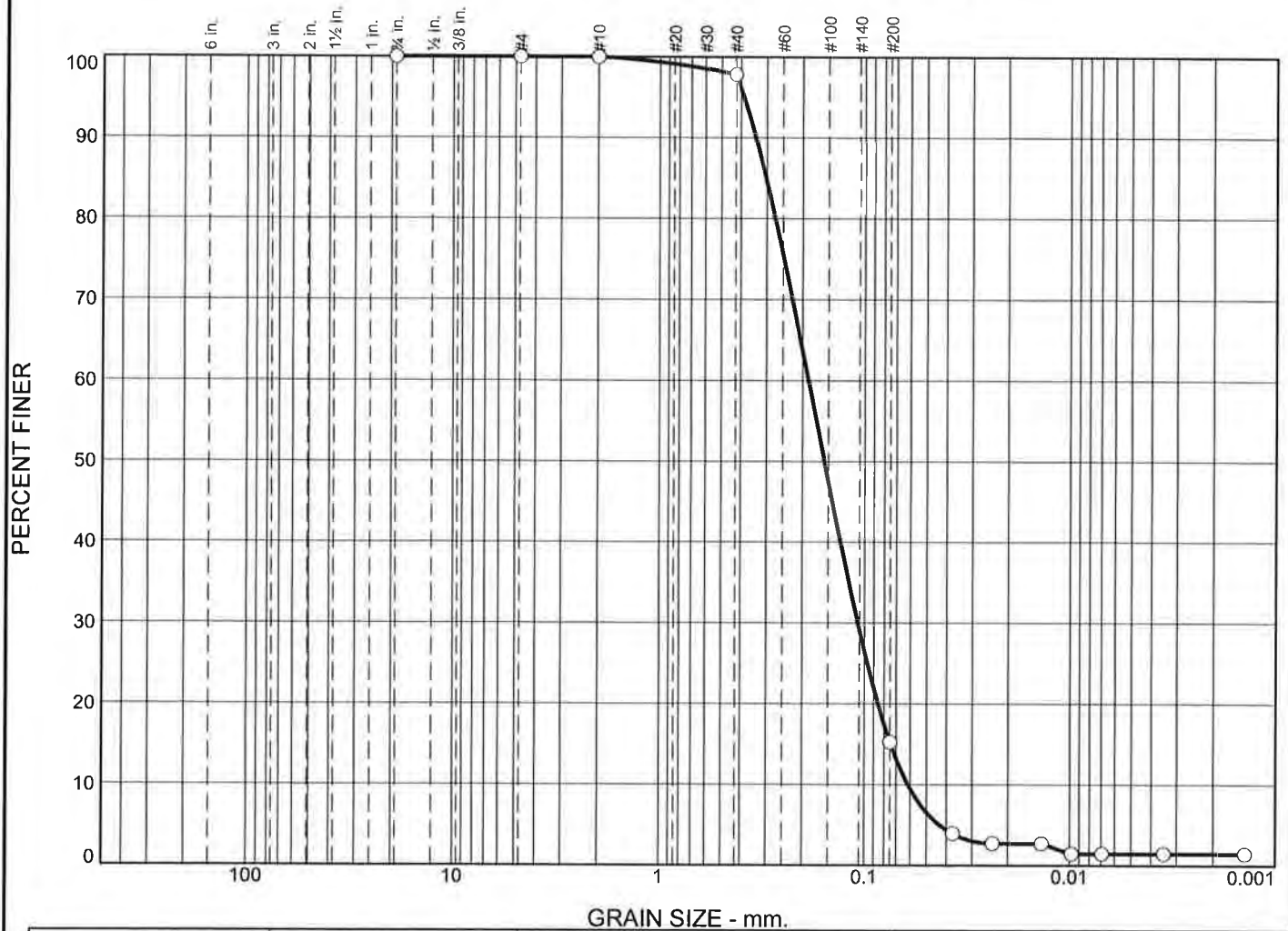
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	7.1	27.3	24.4	58.8	40.9	0.3	41.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0432	0.0474	0.0513	0.0552	0.0635	0.0736	0.1486	0.2974	1.0453	1.3166	1.6890	2.3309

Fineness Modulus	C _u	C _c
1.43	6.27	0.29

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand				% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	0.0	2.2	82.5	13.8		1.5	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.3028	0.1877	0.1571	0.1077	0.0744	0.0613	1.01	3.06

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-N-BOTTOM Sample Number: L1731354-09 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-N-BOTTOM

Sample Number: L1731354-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 41.75

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
41.75	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.91	0.00	97.8
		#200	34.47	0.00	15.3

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.3

Weight of hydrometer sample = 41.75

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0379	0.7
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.1
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.1
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.1
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.1
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.1
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.1

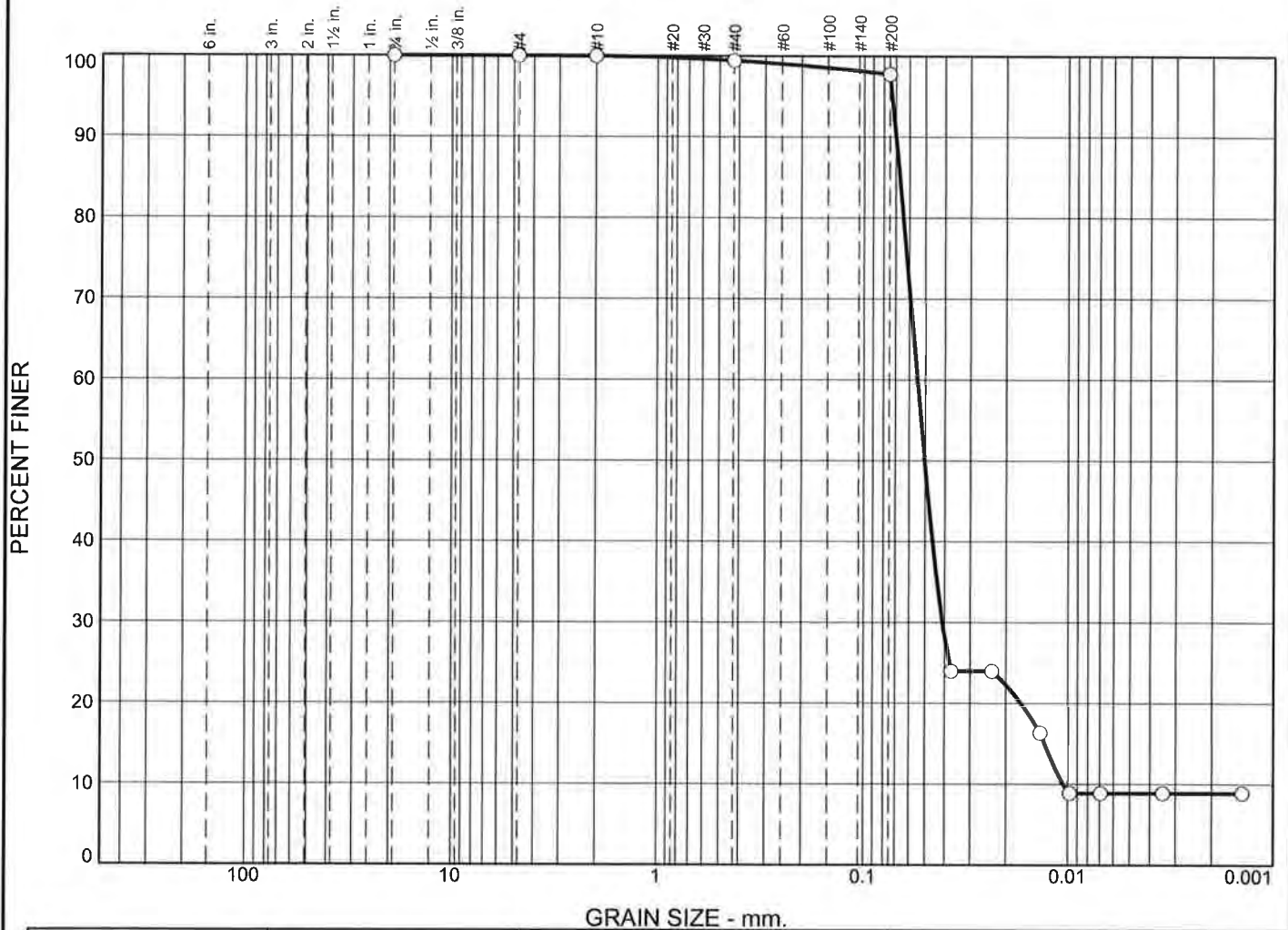
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	82.5	84.7	15.2	0.1	15.3

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0523	0.0640	0.0745	0.0845	0.1050	0.1274	0.1529	0.1831	0.2683	0.2990	0.3369	0.3869

Fineness Modulus	C _u	C _c
0.68	2.86	0.94

Particle Size Distribution Report

[illegible]

Material Description	USCS	AASHTO
○		

Project No. Project: <input type="radio"/> Source of Sample: NHH-O-TOP Sample Number: L1731354-10 Date: <input type="radio"/>	Remarks: <div style="text-align: right;">Figure</div>
<div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-O-TOP

Sample Number: L1731354-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.80

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.80	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.01	0.00	100.0
		#40	0.11	0.00	99.4
		#200	0.35	0.00	97.7

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 97.7

Weight of hydrometer sample = 20.80

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	24.0
5.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0236	24.0
15.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0137	16.4
30.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0098	8.9
60.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0069	8.9
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	8.9
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	8.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	1.7	2.3	88.8	8.9	97.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0106	0.0130	0.0169	0.0411	0.0459	0.0503	0.0546	0.0641	0.0668	0.0698	0.0730

Fineness Modulus	C _u	C _c
0.03	5.17	2.93

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-O-BOTTOM

Sample Number: L1731354-11

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 41.28
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
41.28	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.09	0.00	99.8
		#40	0.40	0.00	98.8
		#200	30.63	0.00	24.6

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 24.6

Weight of hydrometer sample = 41.28

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0382	0.2
5.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.2
15.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.2
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.2
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.2
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.2
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.2

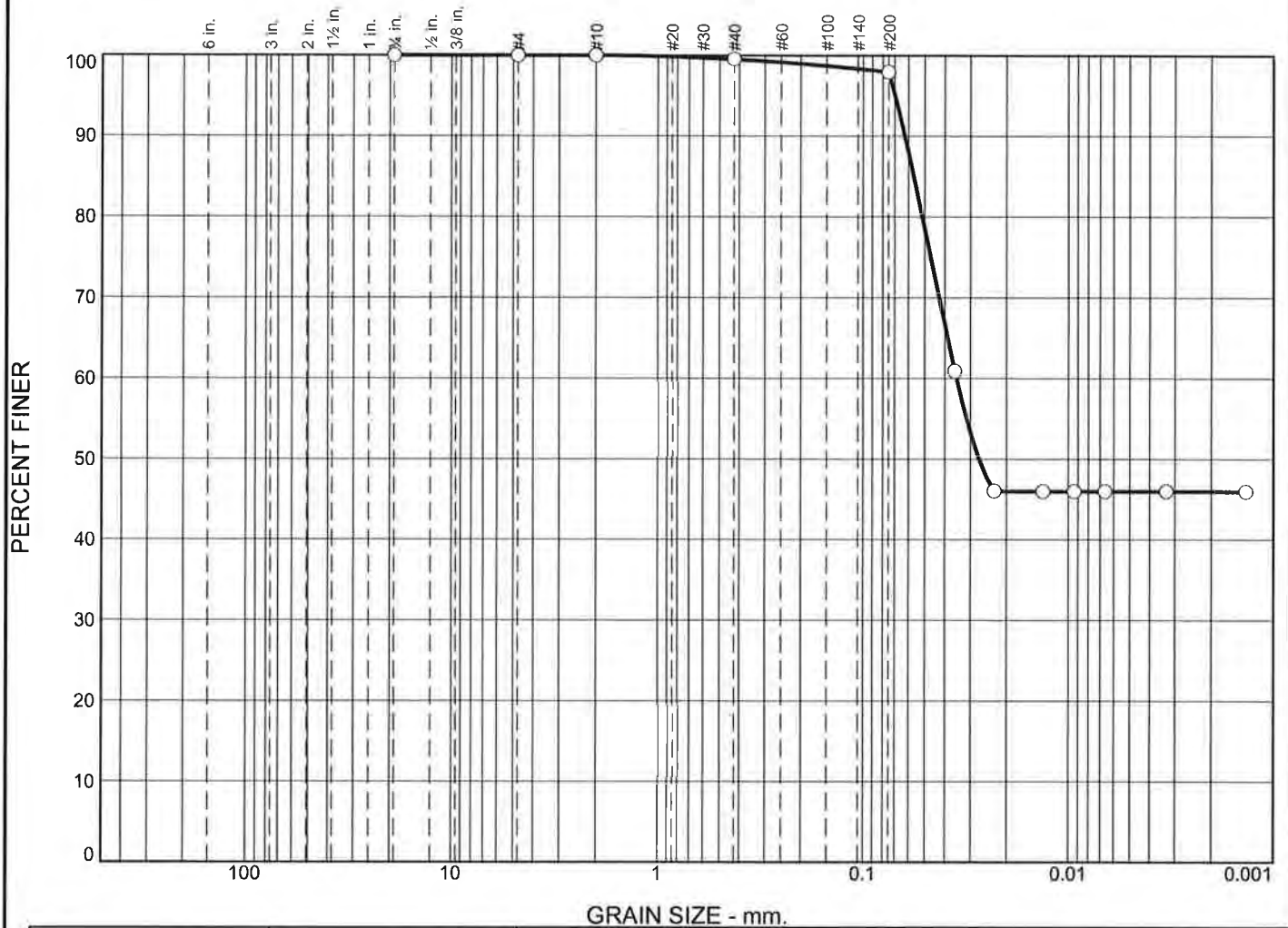
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	1.0	74.2	75.4	24.4	0.2	24.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0474	0.0545	0.0613	0.0683	0.0835	0.1016	0.1235	0.1507	0.2336	0.2653	0.3057	0.3613

Fineness Modulus	C _u	C _c
0.52	2.77	0.85

Particle Size Distribution Report

[illegible]

Material Description	USCS	AASHTO
<div data-bbox="165 1530 180 1533" style="position: absolute; left: 10px; top: 40px;">○</div>		

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: NHH-M Sample Number: L1731354-12		
Date: <input type="radio"/>		
Alpha Analytical Mansfield, MA	Figure	

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-M

Sample Number: L1731354-12

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.14
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.14	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.10	0.00	99.5
		#200	0.33	0.00	98.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 98.0
 Weight of hydrometer sample = 21.14
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0080	1.0082	0.0134	8.0	14.2	0.0357	60.9
5.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0230	46.0
15.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0133	46.0
30.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0094	46.0
60.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0066	46.0
240.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0033	46.0
1440.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0014	46.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	1.5	2.0	52.0	46.0	98.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0272	0.0350	0.0513	0.0564	0.0624	0.0696

Fineness Modulus

0.02

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-T-TOP

Sample Number: L1731354-13

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.07
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
22.07	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.00	0.00	100.0
		#200	0.22	0.00	99.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 99.0
 Weight of hydrometer sample = 22.07
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0040	1.0042	0.0134	4.0	15.2	0.0370	30.1
5.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0236	22.9
15.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0136	22.9
30.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0096	22.9
60.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0068	22.9
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	8.5
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	8.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	81.8	17.2	99.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0037	0.0046	0.0056	0.0368	0.0425	0.0472	0.0519	0.0621	0.0650	0.0682	0.0718

Fineness Modulus	C _u	C _c
0.01	13.87	6.99

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-T-BOTTOM

Sample Number: L1731354-14

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.08
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.08	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.14	0.00	99.3
		#200	0.30	0.00	97.9

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 97.9

Weight of hydrometer sample = 21.08

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0070	1.0072	0.0134	7.0	14.4	0.0360	53.5
5.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0230	46.1
15.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0133	46.1
30.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0094	46.1
60.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0066	46.1
240.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0034	16.3
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	8.8

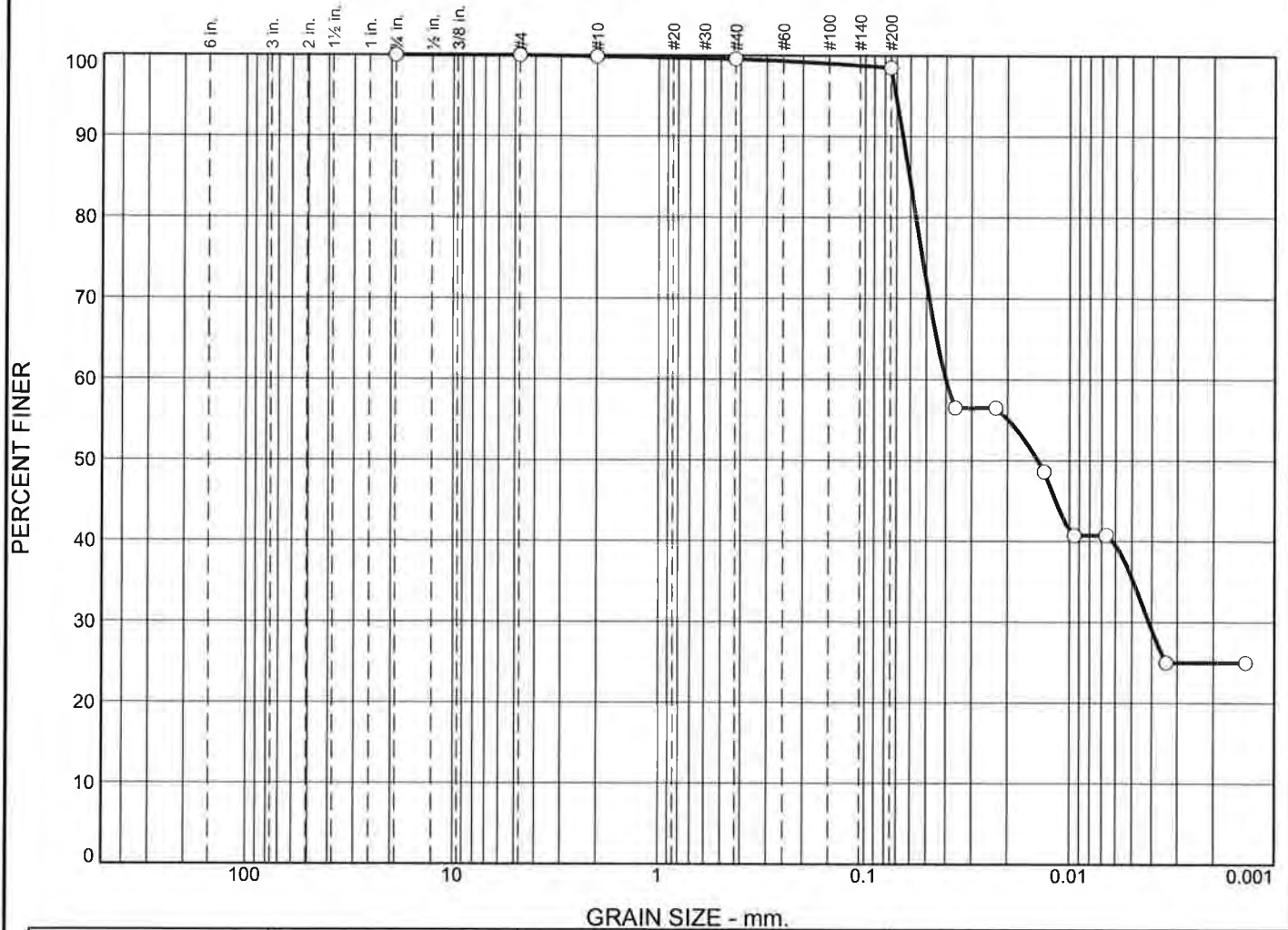
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	1.4	2.1	62.4	35.5	97.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0016	0.0030	0.0037	0.0045	0.0055	0.0322	0.0412	0.0563	0.0606	0.0655	0.0711

Fineness Modulus	C _u	C _c
0.03	25.26	0.30

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel			% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	0.1	0.3	1.1	63.0	35.5		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.0605	0.0401	0.0143	0.0041				

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-U-TOP Sample Number: L1731354-15 Date: <input type="radio"/> Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-U-TOP

Sample Number: L1731354-15

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.11
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.11	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.03	0.00	99.9
		#40	0.06	0.00	99.6
		#200	0.21	0.00	98.5

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 98.5
 Weight of hydrometer sample = 20.11
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0070	1.0072	0.0134	7.0	14.4	0.0360	56.5
5.00	21.5	1.0070	1.0072	0.0134	7.0	14.4	0.0228	56.5
15.00	21.5	1.0060	1.0062	0.0134	6.0	14.7	0.0133	48.6
30.00	21.5	1.0050	1.0052	0.0134	5.0	15.0	0.0095	40.7
60.00	21.5	1.0050	1.0052	0.0134	5.0	15.0	0.0067	40.7
240.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0034	25.0
1440.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0014	25.0

Fractional Components

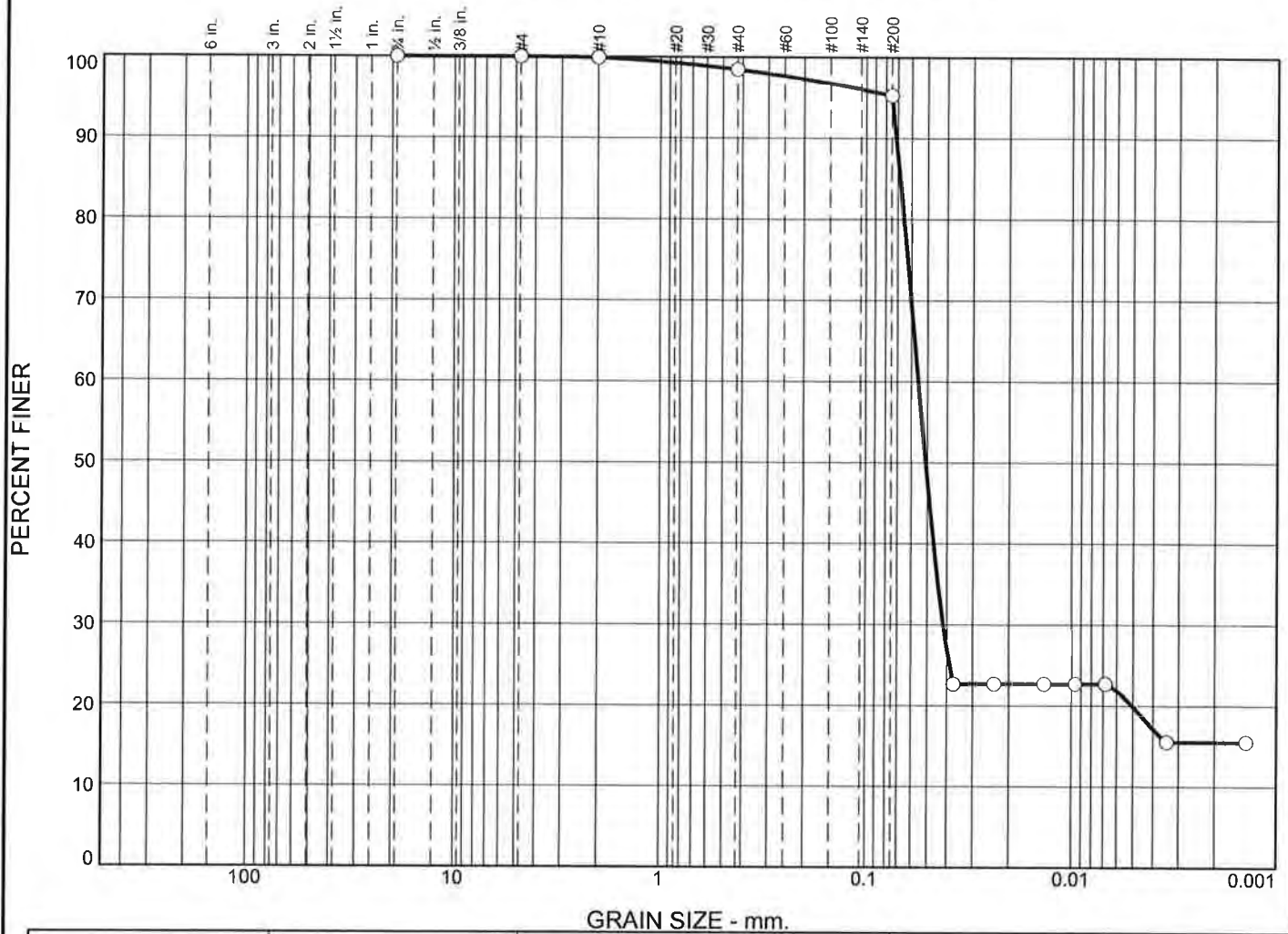
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.3	1.1	1.5	63.0	35.5	98.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0041	0.0062	0.0143	0.0401	0.0562	0.0605	0.0652	0.0706

Fineness
Modulus

0.02

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	0.1	1.4	3.2	75.4		19.9	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.0681	0.0554	0.0509	0.0418				

Material Description

USCS

AASHTO

☐

Project No.

Client:

Remarks:

Project:

☐ Source of Sample: NHH-U-BOTTOM

Sample Number: L1731354-16

Date: ☐

Alpha Analytical

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-U-BOTTOM

Sample Number: L1731354-16

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.41

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
21.41	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.02	0.00	99.9
		#40	0.31	0.00	98.5
		#200	0.68	0.00	95.3

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 95.3

Weight of hydrometer sample = 21.41

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	22.7
5.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0236	22.7
15.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0136	22.7
30.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0096	22.7
60.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0068	22.7
240.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0034	15.6
1440.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0014	15.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.4	3.2	4.7	75.4	19.9	95.3

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0050	0.0418	0.0465	0.0509	0.0554	0.0652	0.0681	0.0713	0.0748

Fineness Modulus
0.07

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-P-TOP

Sample Number: L1731354-17

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.41

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.41	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.09	0.00	99.6
		#200	0.35	0.00	98.1

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 98.1

Weight of hydrometer sample = 23.41

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	21.4
5.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0236	21.4
15.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0136	21.4
30.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0099	1.2
60.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0070	1.2
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	1.2
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	1.2

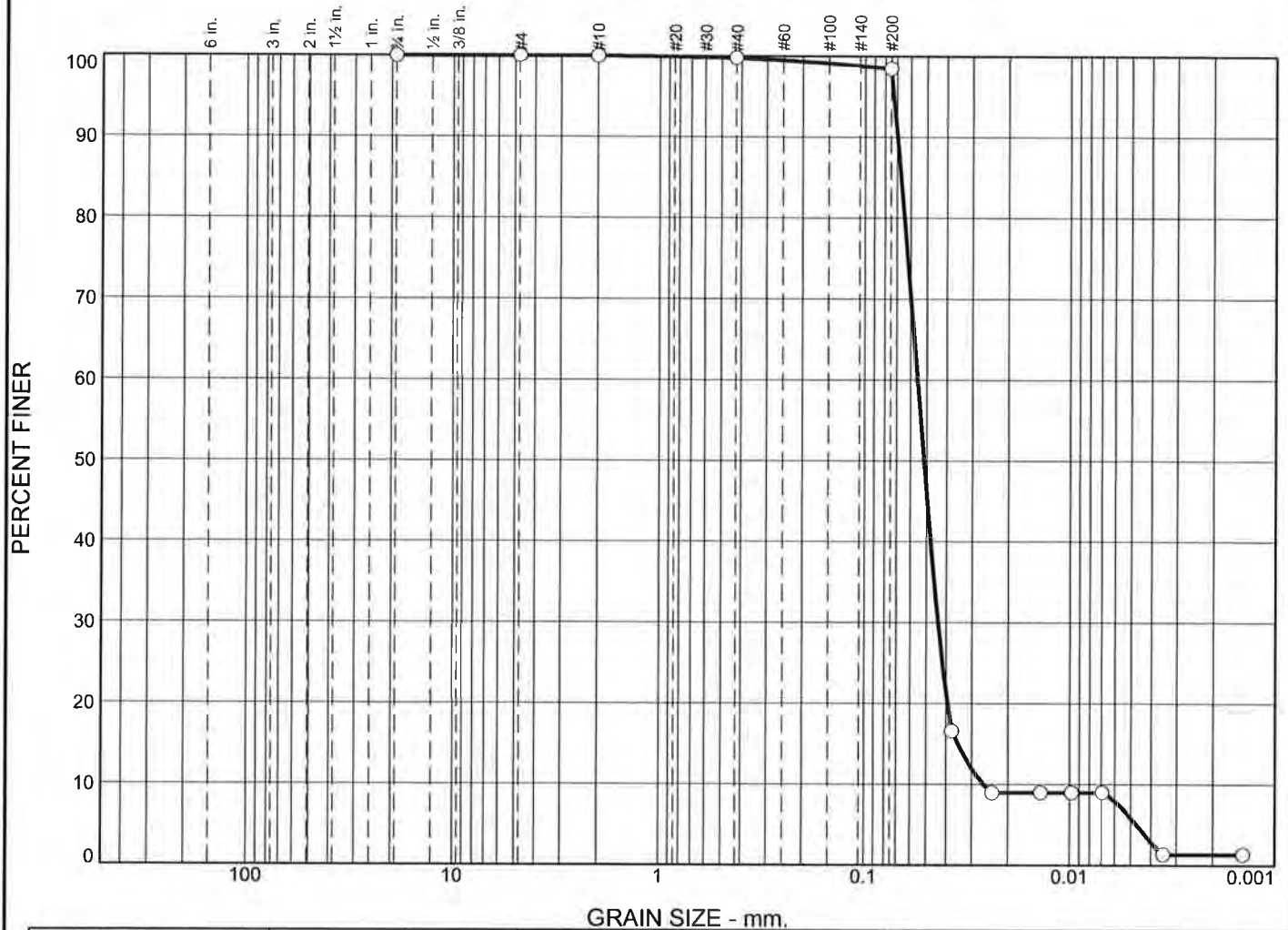
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	1.5	1.9	96.9	1.2	98.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0106	0.0115	0.0123	0.0133	0.0420	0.0465	0.0506	0.0548	0.0641	0.0668	0.0696	0.0728

Fineness Modulus	C _u	C _c
0.02	4.78	2.81

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	0.0	0.0	0.2	1.3	92.7		5.8	
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.0669	0.0556	0.0516	0.0438	0.0351	0.0263	1.31	2.11

Material Description

USCS

AASHTO

Project No.

Client:

Remarks:

Project:

Source of Sample: NHH-P-BOTTOM

Sample Number: L1731354-18

Date: 0

Alpha Analytical

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-P-BOTTOM

Sample Number: L1731354-18

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.72

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.72	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.05	0.00	99.8
		#200	0.27	0.00	98.5

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 98.5

Weight of hydrometer sample = 20.72

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0376	16.6
5.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0240	9.0
15.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0138	9.0
30.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0098	9.0
60.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0069	9.0
240.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0035	1.4
1440.00	21.5	1.0000	1.0002	0.0134	0.0	16.3	0.0014	1.4

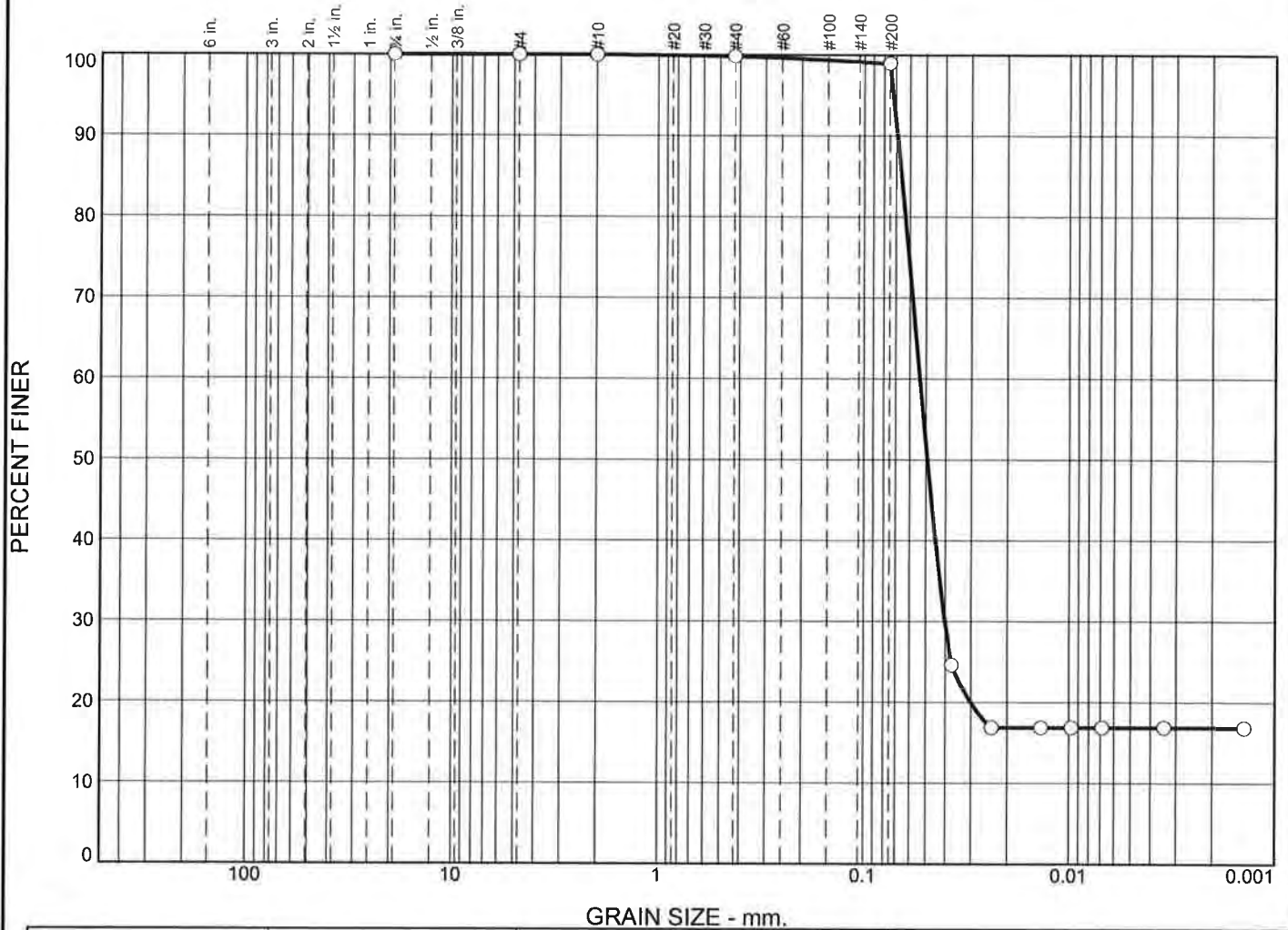
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	1.3	1.5	92.7	5.8	98.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0047	0.0263	0.0351	0.0394	0.0438	0.0477	0.0516	0.0556	0.0644	0.0669	0.0697	0.0727

Fineness Modulus	C _u	C _c
0.02	2.11	1.31

Particle Size Distribution Report



GRAIN SIZE - mm.														
% +3"			% Gravel			% Sand			% Fines					
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay				
○	0.0		0.0		0.0		0.2		0.9		82.0		16.9	
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u			
○				0.0658	0.0535	0.0491	0.0402							

Material Description								USCS	AASHTO

Project No. Project: <input type="radio"/> Source of Sample: NHH-Q-TOP Sample Number: L1731354-19 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Q-TOP

Sample Number: L1731354-19

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.49

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.49	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.04	0.00	99.8
		#200	0.18	0.00	98.9

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 98.9

Weight of hydrometer sample = 20.49

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	24.6
5.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0238	16.9
15.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0137	16.9
30.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0097	16.9
60.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0069	16.9
240.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0034	16.9
1440.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0014	16.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	0.9	1.1	82.0	16.9	98.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0300	0.0402	0.0448	0.0491	0.0535	0.0630	0.0658	0.0688	0.0721

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

9/27/2017

Location: NHH-Q-BOTTOM

Sample Number: L1731354-20

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.85

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
22.85	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.03	0.00	99.9
		#40	0.28	0.00	98.6
		#200	0.42	0.00	96.8

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 96.8

Weight of hydrometer sample = 22.85

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	1.0030	1.0032	0.0134	3.0	15.5	0.0373	21.6
5.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0238	14.8
15.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0137	14.8
30.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0097	14.8
60.00	21.5	1.0020	1.0022	0.0134	2.0	15.8	0.0069	14.8
240.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0035	8.0
1440.00	21.5	1.0010	1.0012	0.0134	1.0	16.0	0.0014	8.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.3	1.8	3.2	84.7	12.1	96.8

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0042	0.0243	0.0345	0.0417	0.0461	0.0504	0.0547	0.0644	0.0672	0.0702	0.0737

Fineness Modulus	C _u	C _c
0.06	13.02	7.57

Alpha Analytical

GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-W-TOP

Sample Number: L1731354-21

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 29.74
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
29.74	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.61	0.00	97.9
		#40	0.93	0.00	94.8
		#200	14.33	0.00	46.6

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 46.6
 Weight of hydrometer sample = 30.46
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0060	1.0064	0.0131	6.0	14.7	0.0356	15.8
5.00	23.1	1.0060	1.0064	0.0131	6.0	14.7	0.0225	15.8
15.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0131	13.3
30.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0093	13.3
60.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0066	12.1
240.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0033	10.9
1440.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0014	10.9

Fractional Components

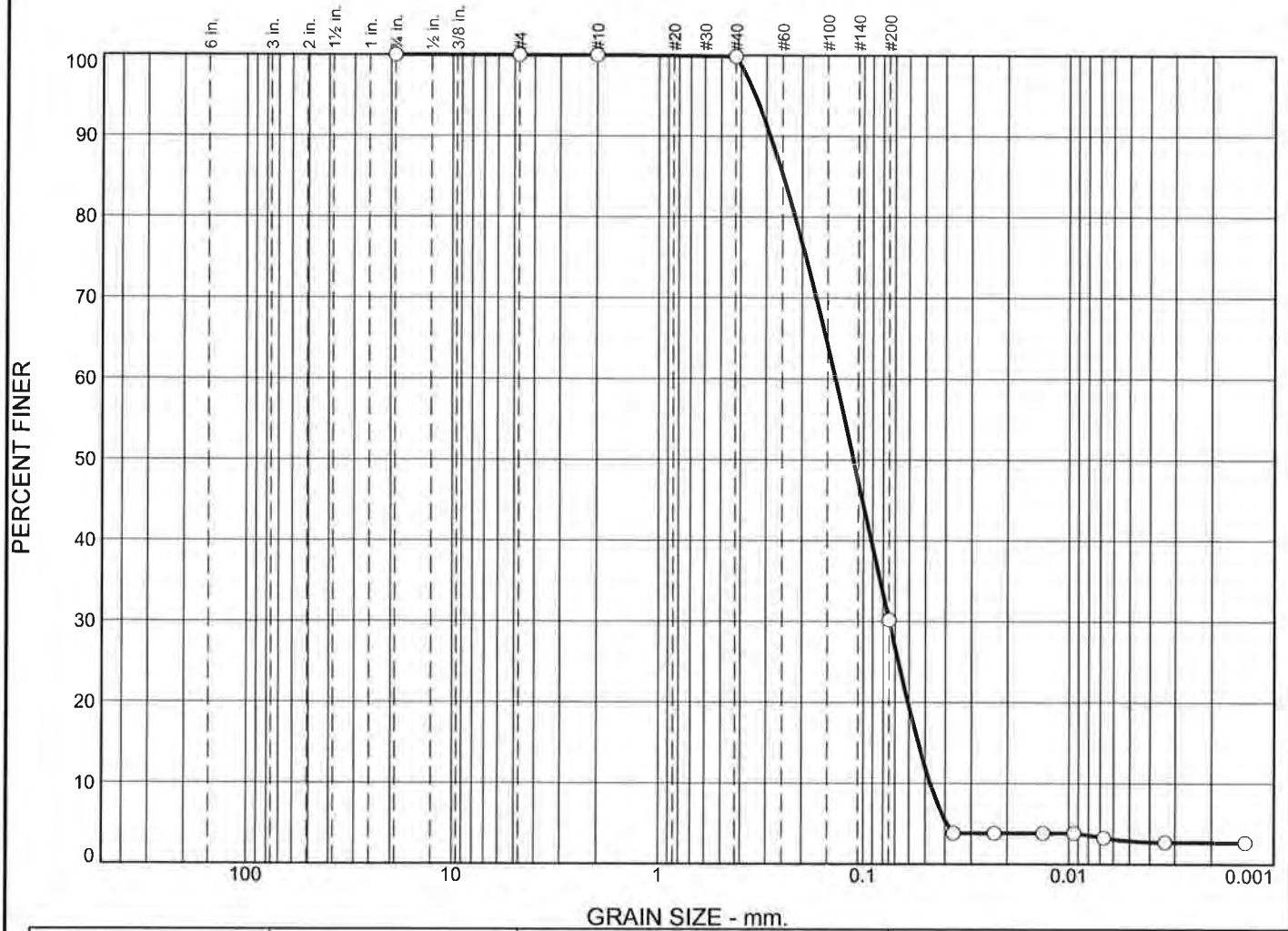
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.1	3.1	48.2	53.4	35.3	11.3	46.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0200	0.0424	0.0540	0.0658	0.0804	0.1007	0.1824	0.2243	0.2915	0.4690

Fineness Modulus

0.45

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	0.0	0.1	69.7	27.3		2.9		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.2478	0.1375	0.1118	0.0747	0.0540	0.0473	0.86	2.91

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-W-BOTTOM Sample Number: L1731354-22 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-W-BOTTOM

Sample Number: L1731354-22

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 40.62
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
40.62	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#40	0.06	0.00	99.9
		#200	28.29	0.00	30.2

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 30.2
 Weight of hydrometer sample = 43.32
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0366	3.8
5.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0231	3.8
15.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0134	3.8
30.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0094	3.8
60.00	23.1	1.0025	1.0029	0.0131	2.5	15.6	0.0067	3.3
240.00	23.1	1.0020	1.0024	0.0131	2.0	15.8	0.0034	2.7
1440.00	23.1	1.0020	1.0024	0.0131	2.0	15.8	0.0014	2.7

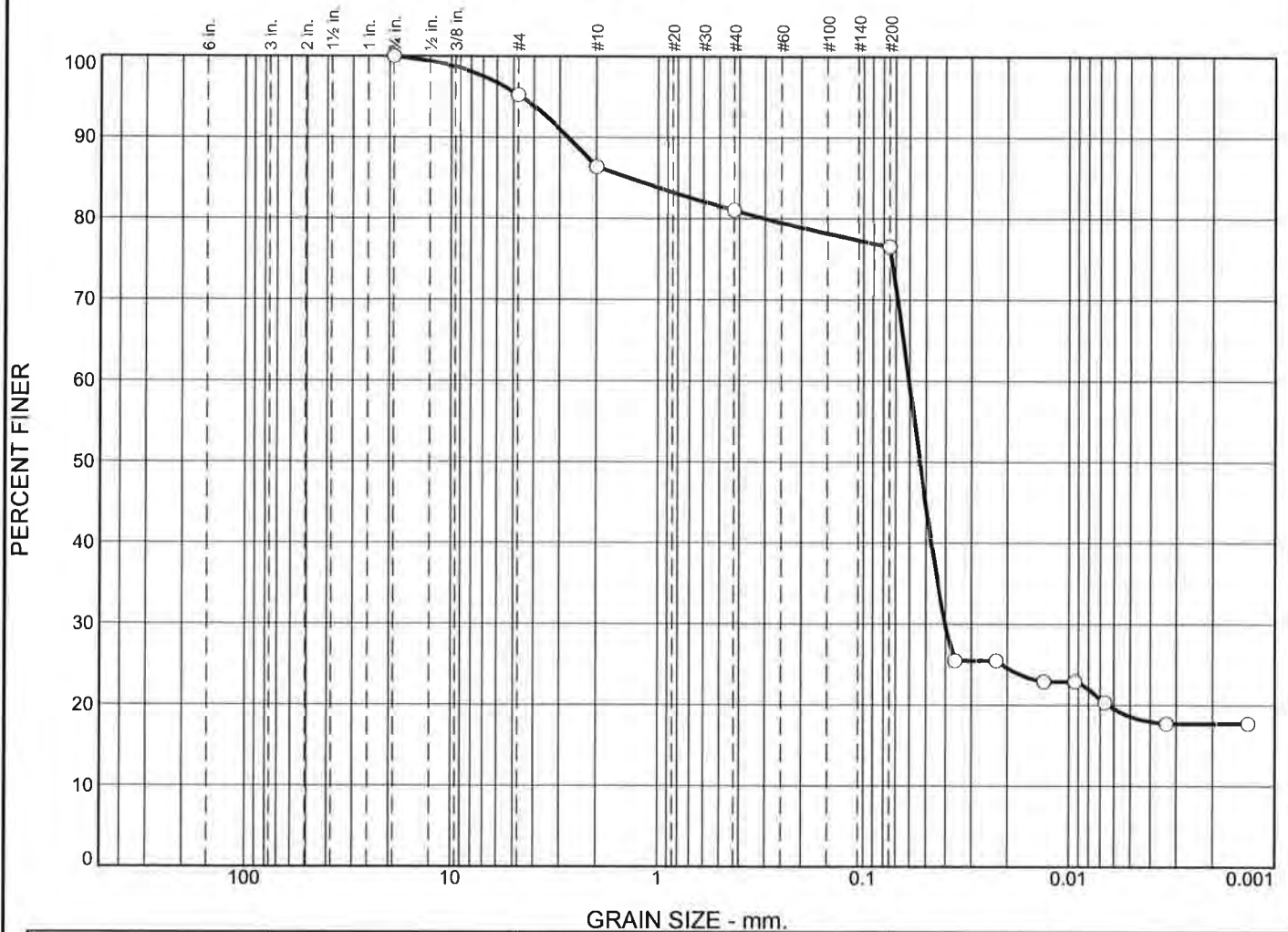
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	69.7	69.8	27.3	2.9	30.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0393	0.0473	0.0540	0.0606	0.0747	0.0913	0.1118	0.1375	0.2171	0.2478	0.2871	0.3411

Fineness Modulus	C _u	C _c
0.45	2.91	0.86

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	4.8	8.8	5.4	4.4	58.0		18.6	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.3923	0.0604	0.0536	0.0403				

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-V-TOP Sample Number: L1731354-23 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-V-TOP

Sample Number: L1731354-23

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.85
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.85	0.00	0.75	0.00	0.00	100.0
		#4	1.14	0.00	95.2
		#10	2.11	0.00	86.4
		#40	1.28	0.00	81.0
		#200	1.06	0.00	76.6

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 76.6
 Weight of hydrometer sample = 23.76
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0361	25.5
5.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0228	25.5
15.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0132	22.9
30.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0094	22.9
60.00	23.1	1.0035	1.0039	0.0131	3.5	15.4	0.0066	20.3
240.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0033	17.7
1440.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0014	17.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	4.8	4.8	8.8	5.4	4.4	18.6	58.0	18.6	76.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0064	0.0403	0.0472	0.0536	0.0604	0.3020	1.3923	2.7403	4.6150

Fineness Modulus
0.93

GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-V-BOTTOM

Sample Number: L1731354-24

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.48
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
22.48	0.00	0.75	0.00	0.00	100.0
		#4	0.24	0.00	98.9
		#10	0.91	0.00	94.9
		#40	0.66	0.00	91.9
		#200	0.73	0.00	88.7

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 88.7
 Weight of hydrometer sample = 23.11
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0361	30.4
5.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0228	30.4
15.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0132	27.3
30.00	23.1	1.0035	1.0039	0.0131	3.5	15.4	0.0094	24.2
60.00	23.1	1.0035	1.0039	0.0131	3.5	15.4	0.0066	24.2
240.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0033	21.1
1440.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0014	21.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.1	1.1	4.0	3.0	3.2	10.2	65.4	23.3	88.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0208	0.0431	0.0488	0.0545	0.0675	0.0716	0.1505	2.0301

Fineness Modulus

0.38

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.2	6.3	6.4	6.1	52.6		28.4	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.2446	0.0539	0.0458	0.0063				

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-R-TOP Sample Number: L1731354-25 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-R-TOP

Sample Number: L1731354-25

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.42
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.42	0.00	0.75	0.00	0.00	100.0
		#4	0.05	0.00	99.8
		#10	1.28	0.00	93.5
		#40	1.31	0.00	87.1
		#200	1.25	0.00	81.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 81.0
 Weight of hydrometer sample = 21.02
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0060	1.0064	0.0131	6.0	14.7	0.0356	39.8
5.00	23.1	1.0060	1.0064	0.0131	6.0	14.7	0.0225	39.8
15.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0131	33.6
30.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0093	33.6
60.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0066	30.5
240.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0033	27.4
1440.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0014	27.4

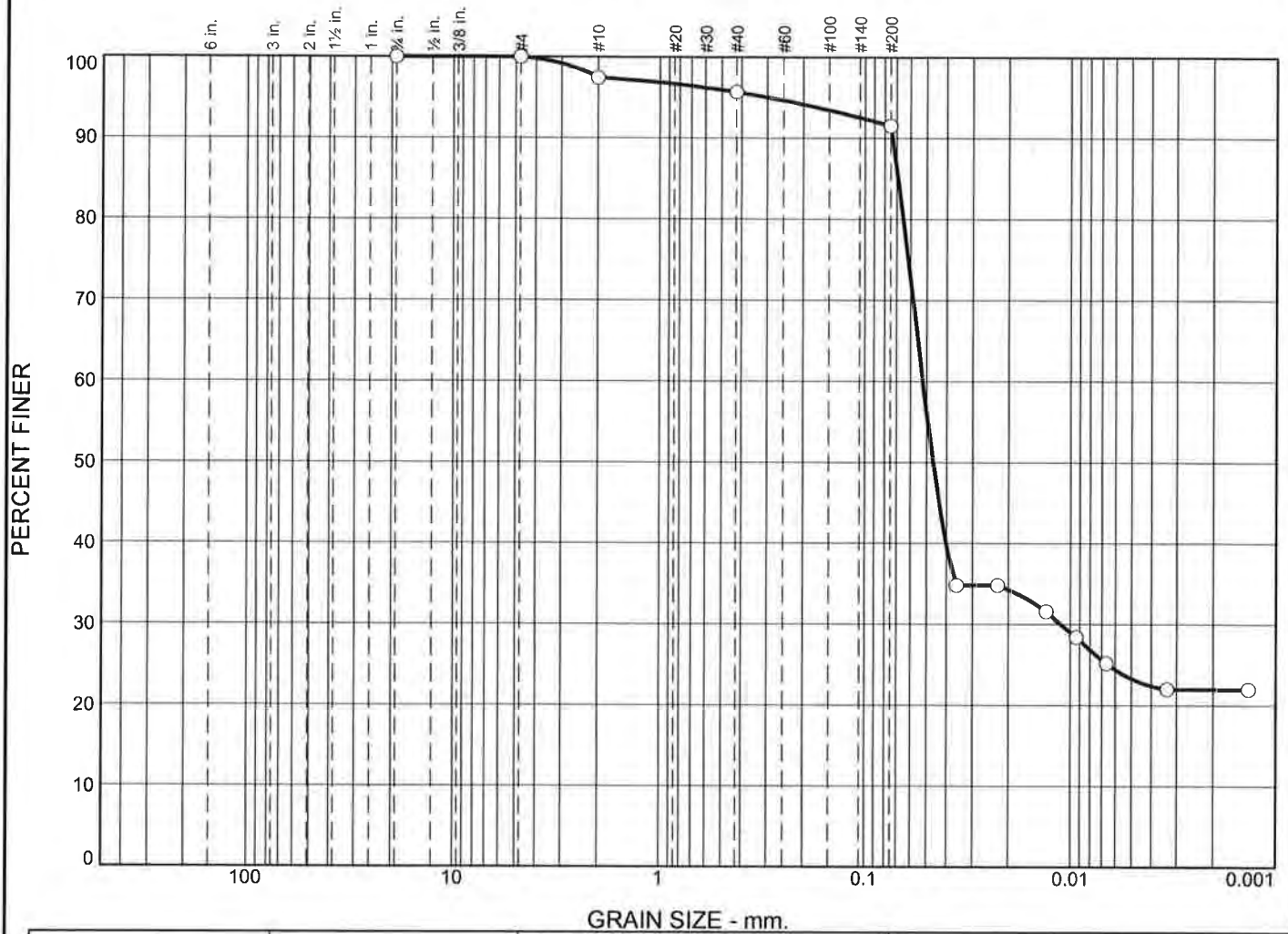
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	6.3	6.4	6.1	18.8	52.6	28.4	81.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0063	0.0360	0.0458	0.0539	0.0737	0.2446	0.8854	2.3570

Fineness Modulus
0.57

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	0.0	2.6	1.7	4.2	68.2	23.3

<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.0690	0.0523	0.0465	0.0112				

Material Description		USCS	AASHTO
<input type="radio"/>			

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: NHH-R-BOTTOM	Sample Number: L1731354-26	
Date: <input type="radio"/>		
Alpha Analytical		Figure
Mansfield, MA		

GRAIN SIZE DISTRIBUTION TEST DATA

9/28/2017

Location: NHH-R-BOTTOM

Sample Number: L1731354-26

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.61
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.61	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.61	0.00	97.4
		#40	0.41	0.00	95.7
		#200	0.98	0.00	91.5

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 91.5
 Weight of hydrometer sample = 22.91
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0359	34.8
5.00	23.1	1.0050	1.0054	0.0131	5.0	15.0	0.0227	34.8
15.00	23.1	1.0045	1.0049	0.0131	4.5	15.1	0.0132	31.6
30.00	23.1	1.0040	1.0044	0.0131	4.0	15.2	0.0094	28.4
60.00	23.1	1.0035	1.0039	0.0131	3.5	15.4	0.0066	25.2
240.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0033	22.0
1440.00	23.1	1.0030	1.0034	0.0131	3.0	15.5	0.0014	22.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.6	1.7	4.2	8.5	68.2	23.3	91.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0112	0.0403	0.0465	0.0523	0.0651	0.0690	0.0735	0.2950

Fineness Modulus

0.20

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	N/A
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	N/A
15. Were the SRM/CRM analyses within acceptance criteria?	N/A
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	N/A
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	N/A
19. Were surrogate recoveries within the required acceptance criteria?	N/A



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	% Clay fine (156%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

kb 9/7/17 L1731354

Page 1 of 2

Client/Project Name: USACE / NHH FMP			Project Location: NEW HAVEN, CT			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°			
Project Number: 60543021			Field Logbook No.:			<div style="border: 1px solid red; padding: 2px;">Rim Hydrometer</div>						Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:									Lab I.D.		Remarks			
Signature: 			Send Results/Report to: MARY O'CONNELL KOZIK			TAT: GS-241A CHEM - STD											
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	GRAV SIZE - SIEVE	METALS - 6004 / 1004-7004	PCBS - 8004 / 8005	PESTICIDES - 8007	PAHS - 8008	TOC - 9060			
NHH-X-TOP	8/8/17	0922	X		802/1602	SD	4°C	N/A	X	X	X	X	X	X		0-4'9"	
NHH-X-REAR-TOP	8/8/17	0922	X			SD			X	X	X	X	X	X		REPLICATE - 0.49"	
NHH-X-BOTTOM	8/8/17	0922	X			SD			X	X	X	X	X	X		4'9" - 8.0'	
NHH-Y-TOP	8/8/17	1037	X			SD			X	X	X	X	X	X		0-5'11"	
NHH-Y-BOTTOM	8/8/17	1037	X		802	SD			X							5'11" - 8'6"	
NHH-Z-TOP	8/8/17	1153	X		802/1602	SD			X	X	X	X	X	X		0-5.0'	
NHH-Z-BOTTOM	8/8/17	1153	X			SD			X	X	X	X	X	X		5.0' - 8'8"	
NHH-N-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0'	
NHH-N-MS-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0' MS	
NHH-N-MSD-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X		0-6.0' MSD	
NHH-N-BOTTOM	8/8/17	1305	X		802	SD			X							6.0' - 7'6"	
NHH-O-TOP	8/8/17	1445	X		802/1602	SD			X	X	X	X	X	X		0-8' 3" 4"	
NHH-O-BOTTOM	8/8/17	1445	X		802	SD			X							8'8" - 10'10"	
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY - AECOM			Date: 8/8/17 Time: 1847			Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 1847			Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOWDOEN, MA					
Signature:			Date: 8/8/17 Time: 2138			Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 2138								
Relinquished by: (Print Name)/(Affiliation) 			Date: Time:			Received by: (Print Name)/(Affiliation) 			Date: Time:								
Sample Shipped Via: UPS FedEx <u>Courier</u> Other			Temp blank <u>Yes</u> No														

AECOM**CHAIN OF CUSTODY RECORD**

L1731354 kb 9/7/17

Page 2 of 2

Client/Project Name: USACE / NHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°																			
Project Number: 60543021			Field Logbook No.:			<div style="border: 1px solid red; padding: 2px; display: inline-block;">Rim Hydrometer</div>						Matrix Codes:		Matrix Codes:																			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:									DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product																			
Signature: 			Send Results/Report to: MARY J CONNELL KOZILIC			TAT: GS 2TAT CHEM - 3ID																											
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered							Lab I.D.	Remarks																	
NHH-M	8/8/17	1610	X		807/1602	SD	4°C	MA	X	X	X	X	X	X		0-6'9"																	
NHH-T-TOP	8/8/17	1734	X		807/1607	SD	L	L	X	X	X	X	X	X		0-4'10"																	
NHH-T-BOTTOM	8/8/17	1734	X		L	SD	L	L	X	X	X	X	X	X		4'10" - 16'4"																	

Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/8/17		Received by: (Print Name)/(Affiliation) 		Date: 8/8/17		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WEST BOROUGH, MA	
Signature:		Time: 1847		Signature:		Time: 1847			
Relinquished by: (Print Name)/(Affiliation) 		Date: 8/8/17		Received by: (Print Name)/(Affiliation) 		Date: 8/8/17			
Signature:		Time: 2138		Signature:		Time: 2138			
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:	
Signature:		Time:		Signature:		Time:		UPS FedEx <u>Courier</u> Other	
								Temp blank <u>Yes</u> No	



CHAIN OF CUSTODY RECORD

~~L1727757~~

Page 1 of 1

Client/Project Name: USACE - NHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested			Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°					
Project Number: 60543021			Field Logbook No.:													
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													
Signature: 			Send Results/Report to: MARY O'CONNELL KOZIK			TAT: GHINSE 24hr (CHEMISTRY-STD)										
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	GRAIN SIZE - SIEVE	METALS - 60004/7474 7473	PCBS - 8082/8270 510	PESTICIDES - 8081 13	PATHS - 82700 510	DOC - 9060	Lab I.D.	Remarks
NHH - U - TOP	8/9/17	0705	X		807/1607	SD	40C	7/4	X	X	X	X	X	X		0 - 5'10"
NHH - U - BOTTOM		0705	X						X	X	X	X	X	X		5'10" - 30'
NHH - P - TOP		1219							X	X	X	X	X	X		0 - 5'9"
NHH - P - BOTTOM		1219							X	X	X	X	X	X		5'9" - 12'4"
NHH - Q - TOP		1427							X	X	X	X	X	X		0 - 5'3"
NHH - Q - BOTTOM		1427							X	X	X	X	X	X		5'3" - 29.5"
NHH - W - TOP		1634							X	X	X	X	X	X		0 - 5'6"
NHH - W - BOTTOM		1634			807				X							5'6" - 8'2"
NHH - V - TOP		1745			807/1607				X	X	X	X	X	X		0 - 4'9"
NHH - V - BOTTOM		1745							X	X	X	X	X	X		4'9" - 8'7"

Rim Hydrometer

Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/9/17 Time: 1900		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALWOP DRIVE WESTBOROUGH, MA	
Signature:				Signature:		Time: 2129			
Relinquished by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 2109		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 2129		Sample Shipped Via: <u>Courier</u> Other <u>Yes</u> Temp blank <u>Yes</u> No	
Signature:				Signature:					

AECOM

CHAIN OF CUSTODY RECORD

kb 9/7/17 L1731354

Page 1 of 2

Client/Project Name:
WACE-MHH-FMP

Project Location:

New Haven, CT

Project Number:

60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):

C. Steve Hone / AECOM

Chain of Custody Tape Nos.:

Signature:

Send Results/Report to:

TAT:

Analysis Requested

Container Type

P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation

1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Rim Hydrometer

Field Sample No./Identification

Date

Time

C
O
M
PG
R
A
BSample
Container
(Size/Mat'l)

Matrix

Preserv.

Field
Filtered**Grain Size****Metals - 6030A / 7471B****PCBS - 8082 / 8210 SW****Residues - 8081B****PAHs - 8200 SW****TOC - 9060**Lab
I.D.

Remarks

NHH-R-Top**8/14/17****0832****X****NHH-R-Bottom****0832****X****NHH-S-Top****0955****X****NHH-S-Bottom****0955****X****NHH-J****1141****X****NHH-L****1300****X****NHH-K-Top****1409****X****NHH-K-Bottom**



ANALYTICAL REPORT

Lab Number:	L1731355
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	10/05/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731355-01	NHH-S-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 09:55	08/10/17
L1731355-02	NHH-S-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 09:55	08/10/17
L1731355-03	NHH-J	SEDIMENT	NEW HAVEN, CT	08/10/17 11:41	08/10/17
L1731355-04	NHH-L	SEDIMENT	NEW HAVEN, CT	08/10/17 13:00	08/10/17
L1731355-05	NHH-K-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:09	08/10/17
L1731355-06	NHH-K-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 14:09	08/10/17
L1731355-07	NHH-H-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1731355-08	NHH-H-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1731355-09	NHH-H-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1731355-10	NHH-I-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17
L1731355-11	NHH-I-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17
L1731355-12	NHH-G-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1731355-13	NHH-G-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1731355-14	NHH-C-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1731355-15	NHH-C-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1731355-16	NHH-B	SEDIMENT	NEW HAVEN, CT	08/11/17 11:57	08/11/17
L1731355-17	NHH-A-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 13:40	08/11/17
L1731355-18	NHH-A-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 13:40	08/11/17
L1731355-19	NHH-D-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1731355-20	NHH-D-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1731355-21	NHH-F-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1731355-22	NHH-F-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1731355-23	NHH-F-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1731355-24	NHH-E-TOP	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731355-25	NHH-E-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.


Grain Size

The WG1040348-1 Laboratory Duplicate RPD for % Fine gravel (93%), % Total gravel (93%) and % Coarse sand (54%), performed on L1731355-16, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1046682-2 Laboratory Duplicate RPD for % Coarse sand (36%) and % Clay fine (140%), performed on L1731355-23, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 10/05/17

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-01
Client ID: NHH-S-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 09:55
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	4.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	4.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	14.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	9.30		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	9.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	33.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	60.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.700		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	61.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-02
Client ID: NHH-S-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 09:55
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	0.400		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	3.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	68.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	71.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	28.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.200		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	28.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-03
Client ID: NHH-J
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 11:41
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	2.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	2.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	6.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	4.70		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	7.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	18.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	78.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.900		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	79.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-04
Client ID: NHH-L
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 13:00
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	20.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	9.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	32.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	62.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	5.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	67.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-05
Client ID: NHH-K-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Coarse Sand	0.700		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Medium Sand	9.40		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Fine Sand	8.10		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Total Sand	18.2		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Silt Fine	51.6		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Clay Fine	30.2		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP
% Total Fines	81.8		%	0.100	NA	1	-	09/19/17 08:55	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-06
Client ID: NHH-K-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	1.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	1.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	8.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	56.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	32.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	96.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	1.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	1.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-07
Client ID: NHH-H-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	9.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	6.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	8.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	24.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	67.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	8.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	75.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-08
Client ID: NHH-H-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.500		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.500		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	4.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	8.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	8.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	21.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	77.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.800		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	77.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-09
Client ID: NHH-H-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	0.400		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	6.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	24.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	30.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	69.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.500		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	69.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-10
Client ID: NHH-I-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	4.30		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	11.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	9.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	25.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	74.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.700		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	74.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-11
Client ID: NHH-I-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	0.700		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	4.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	10.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	15.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	31.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	53.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	85.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-12
Client ID: NHH-G-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.300		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.300		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	8.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	9.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	6.70		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	24.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	64.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	10.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	75.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-13
Client ID: NHH-G-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	1.70		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	6.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	10.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	18.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	70.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	10.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	81.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-14
Client ID: NHH-C-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	3.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	3.40		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	3.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	15.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	54.2		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	72.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	22.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	1.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	24.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-15
Client ID: NHH-C-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.600		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.600		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	10.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	42.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	55.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	43.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.300		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	44.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-16
Client ID: NHH-B
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 11:57
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	2.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	2.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.60		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	22.3		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	54.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	79.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	18.0		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.100		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	18.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-17
Client ID: NHH-A-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	1.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	1.90		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	6.80		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	44.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	39.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	91.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	7.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	7.00		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-18
Client ID: NHH-A-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.100		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.100		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	2.30		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	32.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	62.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	97.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	2.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	2.10		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-19
Client ID: NHH-D-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	0.200		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	0.200		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	0.900		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	6.70		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	8.50		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	16.1		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	65.9		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	17.8		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	83.7		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-20
Client ID: NHH-D-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Coarse Sand	0.900		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Medium Sand	5.20		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Fine Sand	10.5		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Sand	16.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Silt Fine	82.6		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Clay Fine	0.800		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP
% Total Fines	83.4		%	0.100	NA	1	-	09/11/17 11:49	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-21
Client ID: NHH-F-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Coarse Sand	18.2		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Medium Sand	9.00		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Sand	5.70		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Sand	32.9		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Silt Fine	66.1		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Clay Fine	1.00		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Fines	67.1		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-22
Client ID: NHH-F-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Coarse Sand	1.00		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Medium Sand	8.80		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Sand	6.20		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Sand	16.0		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Silt Fine	74.0		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Clay Fine	10.0		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Fines	84.0		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-23
Client ID: NHH-F-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Coarse Sand	2.30		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Medium Sand	2.70		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Sand	2.10		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Sand	7.10		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Silt Fine	84.9		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Clay Fine	8.00		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Fines	92.9		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-24
Client ID: NHH-E-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Coarse Sand	1.90		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Medium Sand	2.50		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Sand	2.50		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Sand	6.90		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Silt Fine	91.7		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Clay Fine	1.40		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Fines	93.1		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

SAMPLE RESULTS

Lab ID: L1731355-25
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Coarse Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Gravel	ND		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Coarse Sand	0.600		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Medium Sand	10.7		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Fine Sand	6.20		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Sand	17.5		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Silt Fine	81.2		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Clay Fine	1.30		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP
% Total Fines	82.5		%	0.100	NA	1	-	09/28/17 12:15	12,D6913/D7928	SP



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1731355
Report Date: 10/05/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-04,06-20 QC Batch ID: WG1040348-1 QC Sample: L1731355-16 Client ID: NHH-B						
% Coarse Gravel	ND	ND	%	NC		25
% Fine Gravel	2.20	6.00	%	93	Q	25
% Total Gravel	2.20	6.00	%	93	Q	25
% Coarse Sand	2.60	4.50	%	54	Q	25
% Medium Sand	22.3	21.0	%	6		25
% Fine Sand	54.8	50.1	%	9		25
% Total Sand	79.7	75.6	%	6		25
% Silt Fine	18.0	18.3	%	3		25
% Clay Fine	0.100	0.100	%	0		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1731355
Report Date: 10/05/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 21-25 QC Batch ID: WG1046682-2 QC Sample: L1731355-23 Client ID: NHH-F-BOTTOM					
% Coarse Gravel	ND	ND	%	NC	25
% Fine Gravel	ND	ND	%	NC	25
% Total Gravel	ND	ND	%	NC	25
% Coarse Sand	2.30	1.60	%	36	Q 25
% Medium Sand	2.70	2.50	%	8	25
% Fine Sand	2.10	2.00	%	5	25
% Total Sand	7.10	6.10	%	15	25
% Silt Fine	84.9	92.5	%	9	25
% Clay Fine	8.00	1.40	%	140	Q 25
% Total Fines	92.9	93.9	%	1	25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 10051713:01
Lab Number: L1731355
Report Date: 10/05/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A2	Absent
A3	Absent
A4	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731355-01A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIM FORMS(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-02A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-03A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-04A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-05A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 10051713:01
Lab Number: L1731355
Report Date: 10/05/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731355-06A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-07A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-08A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-09A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-10A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-11A	Plastic 8oz unpreserved for Grain Size	A2	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-12A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 10051713:01
Lab Number: L1731355
Report Date: 10/05/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731355-13A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-14A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-15A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-16A	Bag	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-16B	Bag	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-16C	Bag	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-17A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 10051713:01
Lab Number: L1731355
Report Date: 10/05/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731355-18A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-19A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-20A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-21A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-22A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-23A	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-23B	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 10051713:01
Lab Number: L1731355
Report Date: 10/05/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731355-23C	Plastic 8oz unpreserved for Grain Size	A3	NA		2.0	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-24A	Plastic 8oz unpreserved for Grain Size	A4	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()
L1731355-25A	Plastic 8oz unpreserved for Grain Size	A4	NA		5.7	Y	Absent		A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-TSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-CFINE(),A2-RIMHYDRO-FGRAVEL(),A2-RIMHYDRO-FSAND(),A2-RIMHYDRO-CGRAVEL(),A2-RIMHYDRO-SFINE()

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
Report Date: 10/05/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1731355
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REFERENCES

- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

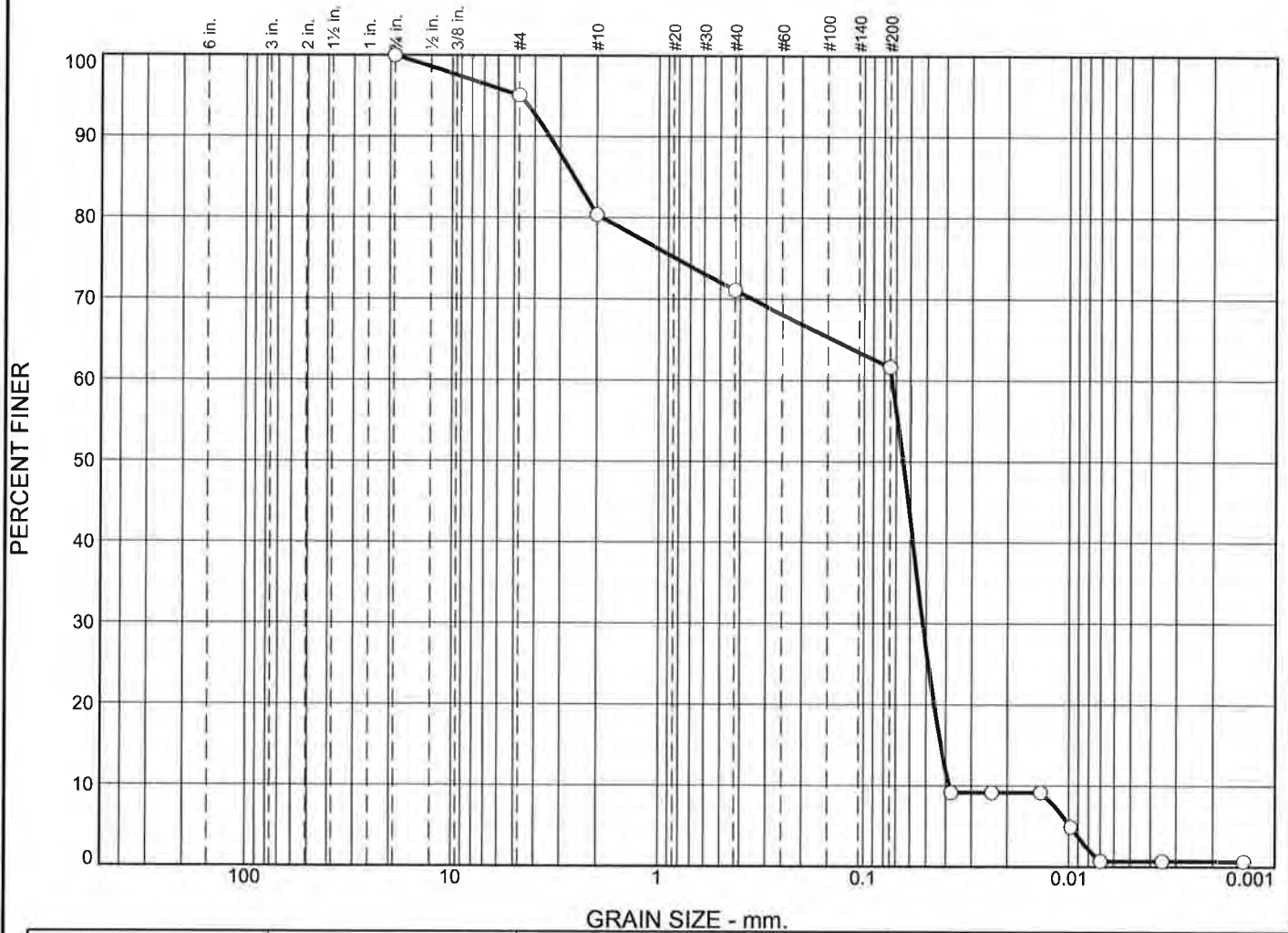
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	4.9	14.7	9.3	9.5	60.9		0.7	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				2.5709	0.0734	0.0650	0.0519	0.0425	0.0385	0.95	1.91

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-S-TOP Sample Number: L1731355-01 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-S-TOP

Sample Number: L1731355-01

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.55

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
22.55	0.00	0.75	0.00	0.00	100.0
		#4	1.11	0.00	95.1
		#10	3.32	0.00	80.4
		#40	2.09	0.00	71.1
		#200	2.13	0.00	61.6

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 61.6

Weight of hydrometer sample = 23.38

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0377	9.2
5.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0238	9.2
15.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0137	9.2
30.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0098	4.9
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.7
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.7
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.7

Fractional Components

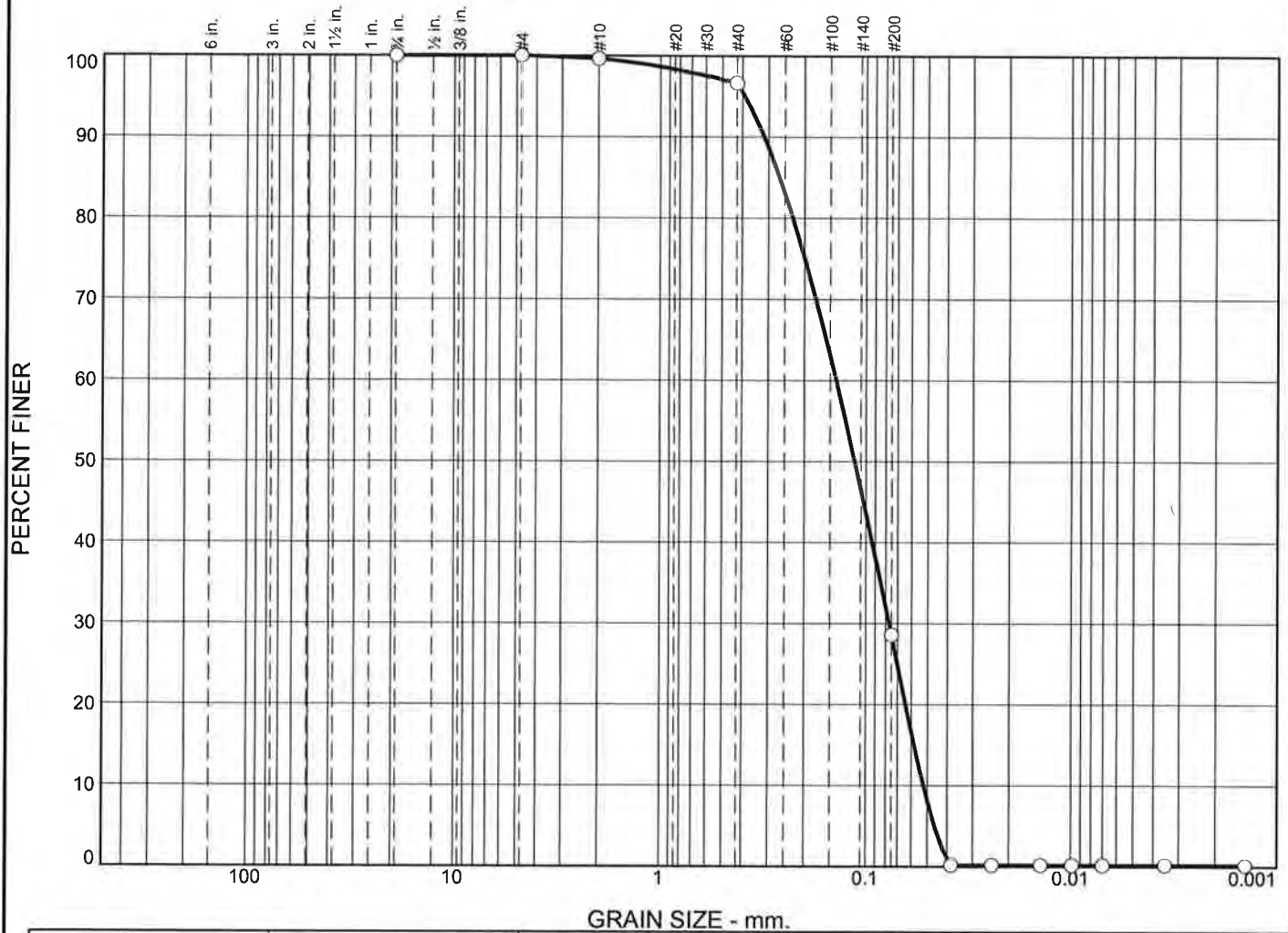
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	4.9	4.9	14.7	9.3	9.5	33.5	60.9	0.7	61.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0099	0.0385	0.0425	0.0458	0.0519	0.0581	0.0650	0.0734	1.8893	2.5709	3.3895	4.7204

Fineness Modulus	C _u	C _c
1.39	1.91	0.95

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	0.4	3.0	68.0	28.4		0.2		
<input type="checkbox"/>											
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.2651	0.1400	0.1134	0.0770	0.0580	0.0522	0.81	2.68
<input type="checkbox"/>											

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-S-BOTTOM Sample Number: L1731355-02 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-S-BOTTOM

Sample Number: L1731355-02

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 42.67
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
42.67	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	99.6
		#40	1.30	0.00	96.6
		#200	29.02	0.00	28.6

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 28.6
 Weight of hydrometer sample = 42.78
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.2
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.2
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.2
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.2
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.2
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.2
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	3.0	68.0	71.4	28.4	0.2	28.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0460	0.0522	0.0580	0.0639	0.0770	0.0931	0.1134	0.1400	0.2284	0.2651	0.3148	0.3899

Fineness Modulus	C _u	C _c
0.52	2.68	0.81

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-J

Sample Number: L1731355-03

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.00

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
24.00	0.00	0.75	0.00	0.00	100.0
		#4	0.59	0.00	97.5
		#10	1.58	0.00	91.0
		#40	1.11	0.00	86.3
		#200	1.73	0.00	79.1

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 79.1

Weight of hydrometer sample = 23.42

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	R _m	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0380	6.3
5.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0240	6.3
15.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0139	6.3
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.9
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.9
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.9
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.5	2.5	6.5	4.7	7.2	18.4	78.2	0.9	79.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0128	0.0404	0.0431	0.0454	0.0498	0.0542	0.0587	0.0635	0.0903	0.2955	1.3770	3.0807

Fineness Modulus	C _u	C _c
0.66	1.57	0.97

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	0.0	2.8	20.2	9.6	62.2		5.2	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.8713	0.0688	0.0619	0.0504	0.0418	0.0380	0.97	1.81

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-L Sample Number: L1731355-04 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: <div style="text-align: right;">Figure</div>

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-L

Sample Number: L1731355-04

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.64
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
25.64	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.73	0.00	97.2
		#40	5.16	0.00	77.0
		#200	2.46	0.00	67.4

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 67.4
 Weight of hydrometer sample = 24.42
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0377	9.6
5.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0238	9.6
15.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0137	9.6
30.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0098	5.2
60.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0069	5.2
240.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0035	5.2
1440.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0014	5.2

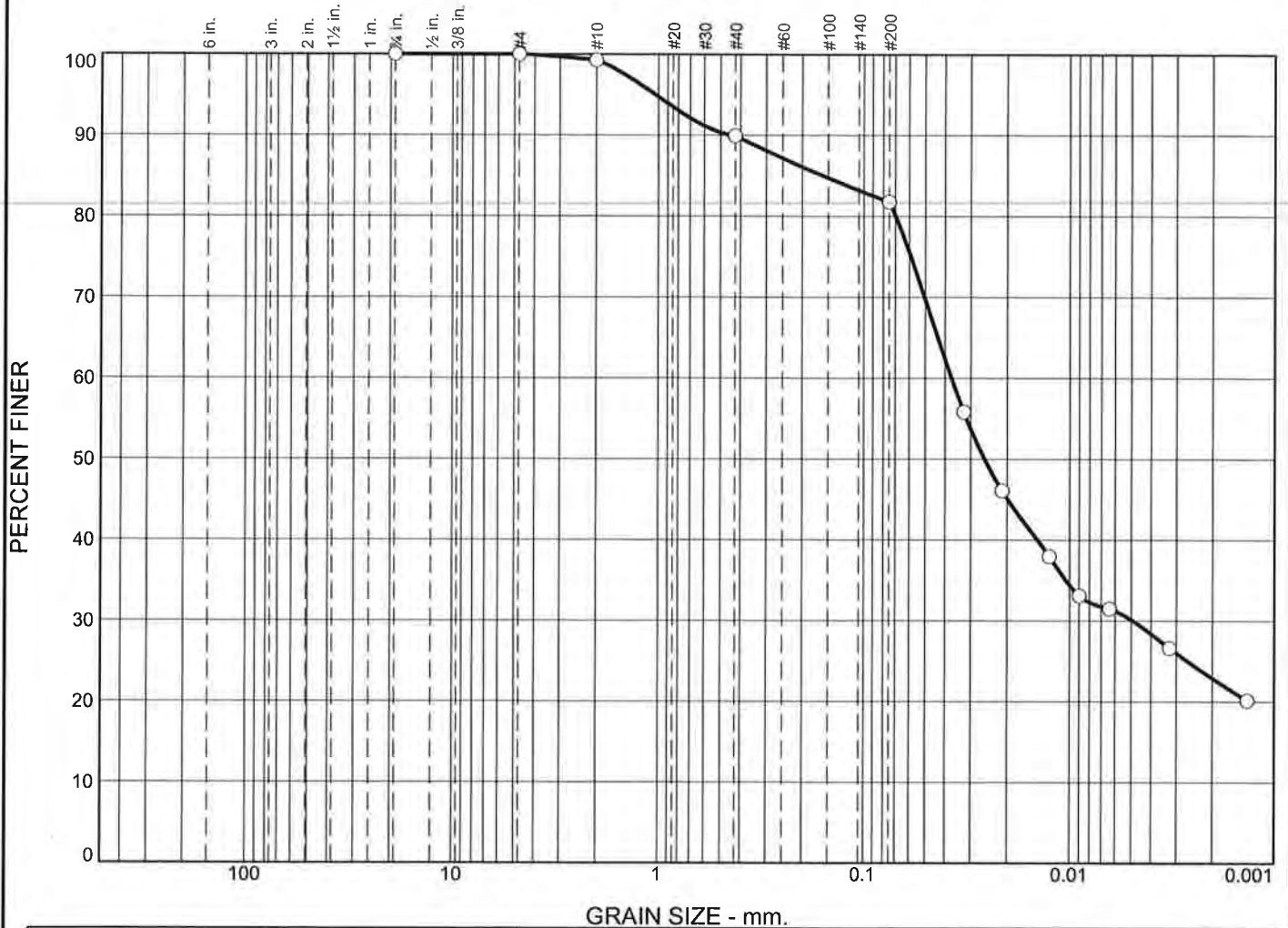
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.8	20.2	9.6	32.6	62.2	5.2	67.4

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0380	0.0418	0.0449	0.0504	0.0560	0.0619	0.0688	0.5697	0.8713	1.2593	1.7513

Fineness Modulus	C _u	C _c
0.89	1.81	0.97

Particle Size Distribution Report



GRAIN SIZE (mm):											
% +3"			% Gravel			% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	0.7	9.4	8.1	51.6		30.2	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.1592	0.0372	0.0257	0.0049				

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-K-TOP Sample Number: L1731355-05 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/5/2017

Location: NHH-K-TOP

Sample Number: L1731355-05

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 32.70

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
32.70	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.24	0.00	99.3
		#40	3.06	0.00	89.9
		#200	2.66	0.00	81.8

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 81.8

Weight of hydrometer sample = 40.51

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0170	1.0172	0.0133	17.0	11.8	0.0324	55.8
5.00	21.8	1.0140	1.0142	0.0133	14.0	12.6	0.0212	46.1
15.00	21.8	1.0115	1.0117	0.0133	11.5	13.3	0.0125	38.0
30.00	21.8	1.0100	1.0102	0.0133	10.0	13.6	0.0090	33.1
60.00	21.8	1.0095	1.0097	0.0133	9.5	13.8	0.0064	31.5
240.00	21.8	1.0080	1.0082	0.0133	8.0	14.2	0.0032	26.7
1440.00	21.8	1.0060	1.0062	0.0133	6.0	14.7	0.0013	20.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.7	9.4	8.1	18.2	51.6	30.2	81.8

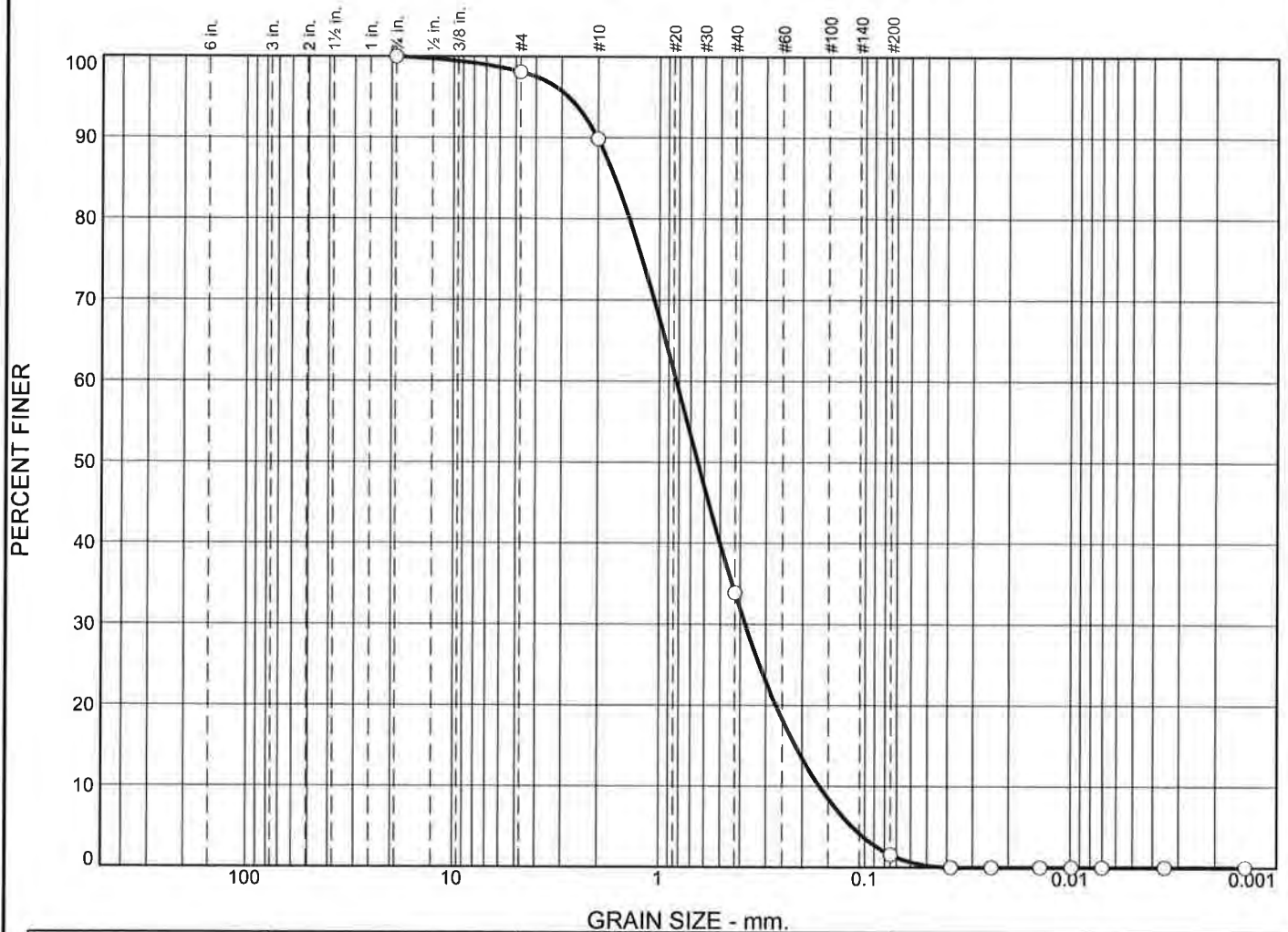
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0049	0.0143	0.0257	0.0372	0.0699	0.1592	0.4470	1.0347

Fineness
Modulus

0.41

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-K-BOTTOM

Sample Number: L1731355-06

USCS Classification: SP

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 44.07

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
44.07	0.00	0.75	0.00	0.00	100.0
		#4	0.85	0.00	98.1
		#10	3.62	0.00	89.9
		#40	24.66	0.00	33.9
		#200	14.25	0.00	1.6

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.6

Weight of hydrometer sample = 44.72

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.0
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.0
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.0
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.0
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.0
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.0
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.9	1.9	8.2	56.0	32.3	96.5	1.6	0.0	1.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1150	0.1655	0.2156	0.2674	0.3785	0.5021	0.6464	0.8251	1.3996	1.6467	2.0135	2.7798

Fineness Modulus	C _u	C _c
2.57	4.99	1.05

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0	0.0	0.0	9.5	6.9	8.4	67.0		8.2	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>				0.5788	0.0646	0.0590	0.0491	0.0413	0.0377	0.99
<input type="radio"/>										1.71

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-H-TOP Sample Number: L1731355-07 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-H-TOP

Sample Number: L1731355-07

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.58
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
25.58	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	2.44	0.00	90.5
		#40	1.76	0.00	83.6
		#200	2.15	0.00	75.2

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 75.2

Weight of hydrometer sample = 26.39

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0377	9.9
5.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0238	9.9
15.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0137	9.9
30.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0097	9.9
60.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0069	9.9
240.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0035	5.3
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.8

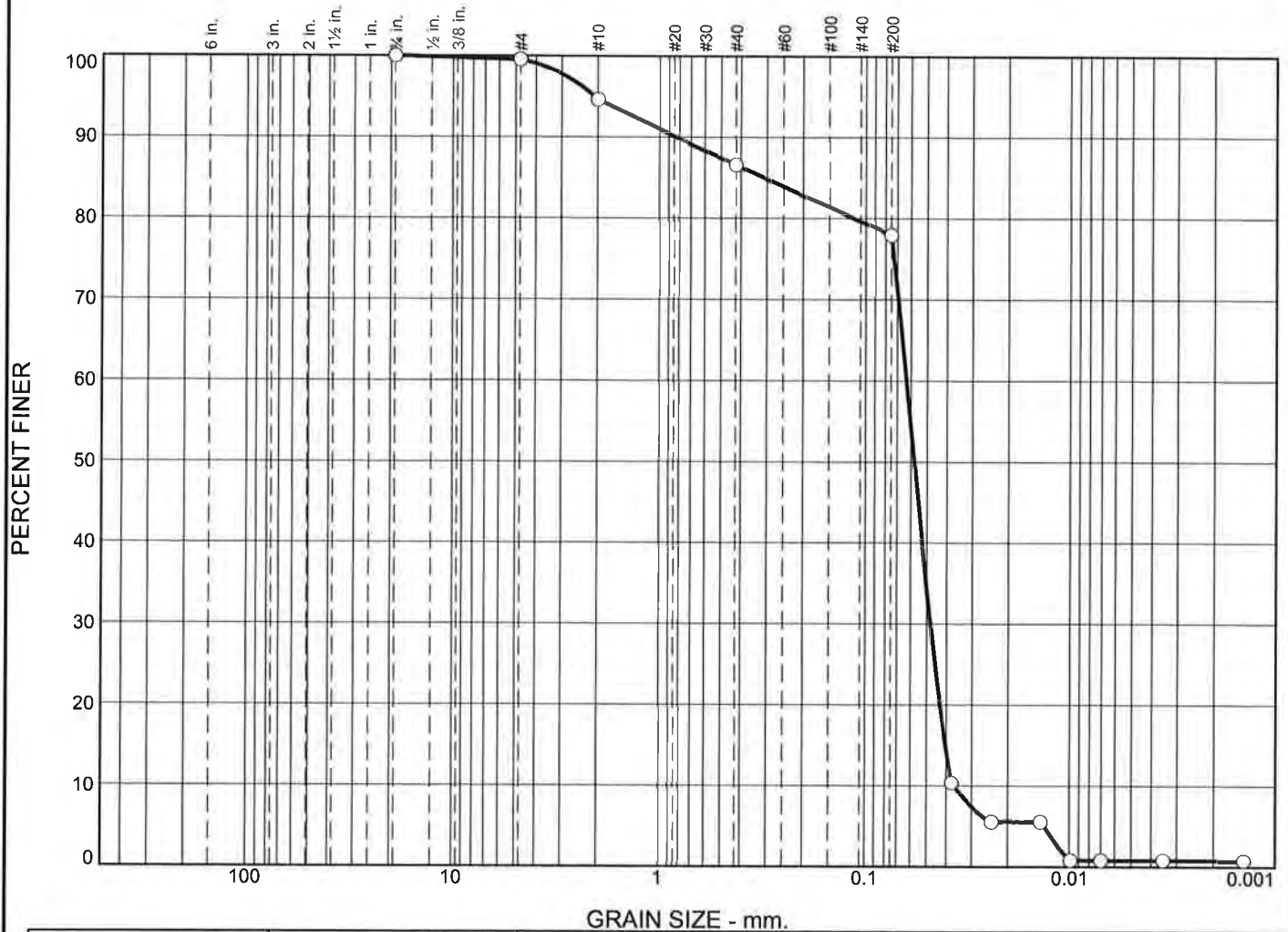
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	9.5	6.9	8.4	24.8	67.0	8.2	75.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0033	0.0377	0.0413	0.0441	0.0491	0.0540	0.0590	0.0646	0.1992	0.5788	1.7950	2.8135

Fineness Modulus	C _u	C _c
0.73	1.71	0.99

Particle Size Distribution Report



GRAIN SIZE - mm:											
% +3"			% Gravel			% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.5	4.9	8.1	8.6	77.1	0.8		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.3141	0.0630	0.0576	0.0480	0.0405	0.0366	1.00	1.72

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-H-REP-TOP Sample Number: L1731355-08 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-H-REP-TOP

Sample Number: L1731355-08

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.43
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
26.43	0.00	0.75	0.00	0.00	100.0
		#4	0.12	0.00	99.5
		#10	1.31	0.00	94.6
		#40	2.13	0.00	86.5
		#200	2.27	0.00	77.9

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 77.9

Weight of hydrometer sample = 25.98

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0377	10.4
5.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0240	5.6
15.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0139	5.6
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.8
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.8
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.8
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.8

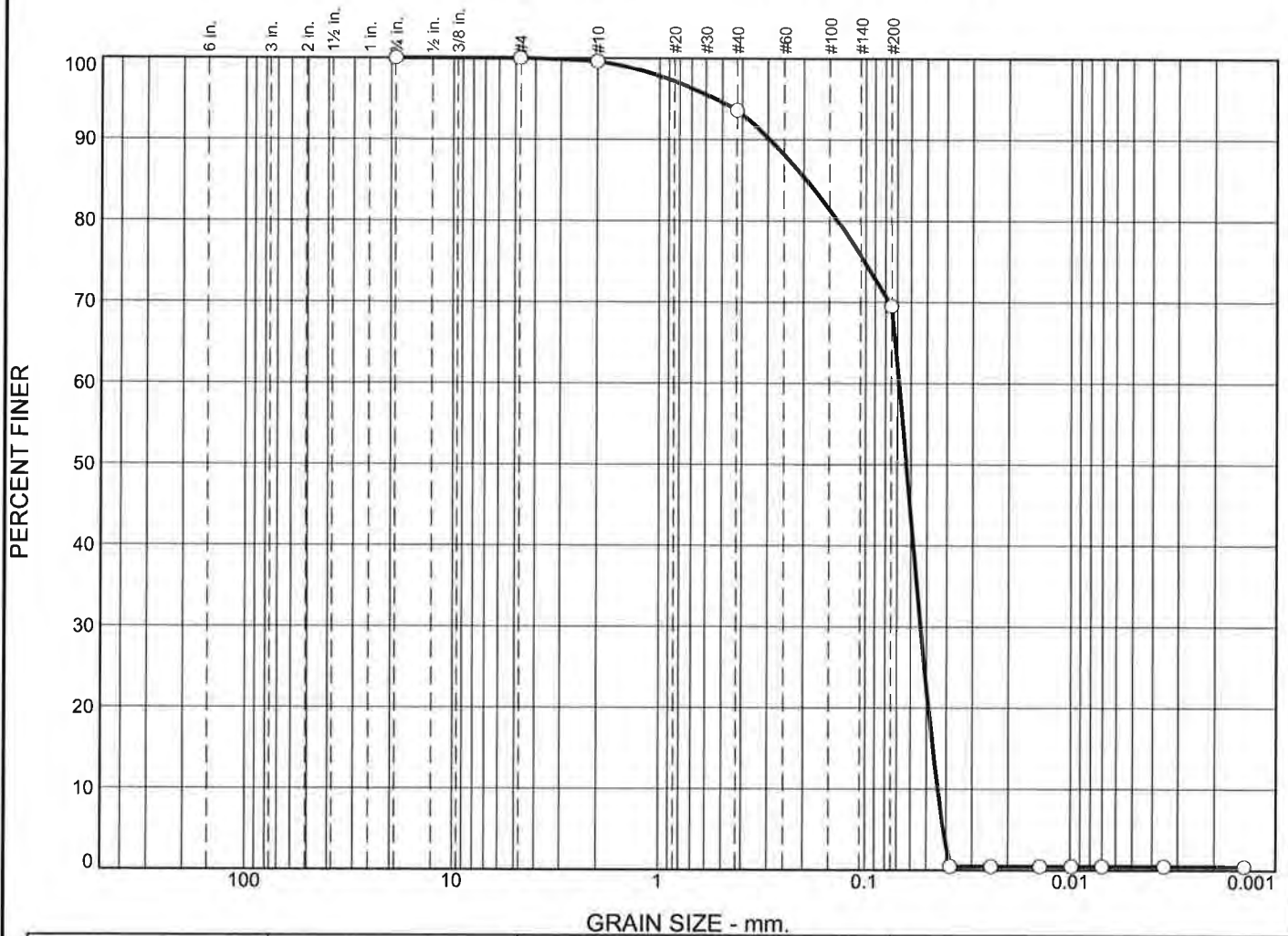
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	4.9	8.1	8.6	21.6	77.1	0.8	77.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0132	0.0366	0.0405	0.0432	0.0480	0.0527	0.0576	0.0630	0.1146	0.3141	0.8351	2.0818

Fineness Modulus	C _u	C _c
0.58	1.72	1.00

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
○	0.0		0.0	0.0	0.4	6.0	24.1	69.0		0.5	
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.1946	0.0687	0.0631	0.0535	0.0466	0.0441	0.94	1.56

Material Description

USCS

AASHTO

Project No.

Client:

Remarks:

Project:

Source of Sample: NHH-H-BOTTOM

Sample Number: L1731355-09

Date: ○

Alpha Analytical

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-H-BOTTOM

Sample Number: L1731355-09

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 35.26
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
35.26	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.13	0.00	99.6
		#40	2.13	0.00	93.6
		#200	8.50	0.00	69.5

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 69.5

Weight of hydrometer sample = 37.37

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.5
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.5
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.5
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.5
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.5
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.5
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	6.0	24.1	30.5	69.0	0.5	69.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0414	0.0441	0.0466	0.0489	0.0535	0.0581	0.0631	0.0687	0.1376	0.1946	0.2939	0.5424

Fineness Modulus	C _u	C _c
0.35	1.56	0.94

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	4.3	11.4	9.5	74.1		0.7	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.4745	0.0661	0.0611	0.0523	0.0459	0.0436	0.95	1.52

Material Description									USCS	AASHTO
<input type="radio"/>										

Project No. Project: <input type="radio"/> Source of Sample: NHH-I-TOP Sample Number: L1731355-10 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-I-TOP

Sample Number: L1731355-10

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 27.16
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
27.16	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.16	0.00	95.7
		#40	3.11	0.00	84.3
		#200	2.57	0.00	74.8

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 74.8

Weight of hydrometer sample = 26.99

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.7
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.7
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.7
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.7
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.7
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.7
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.7

Fractional Components

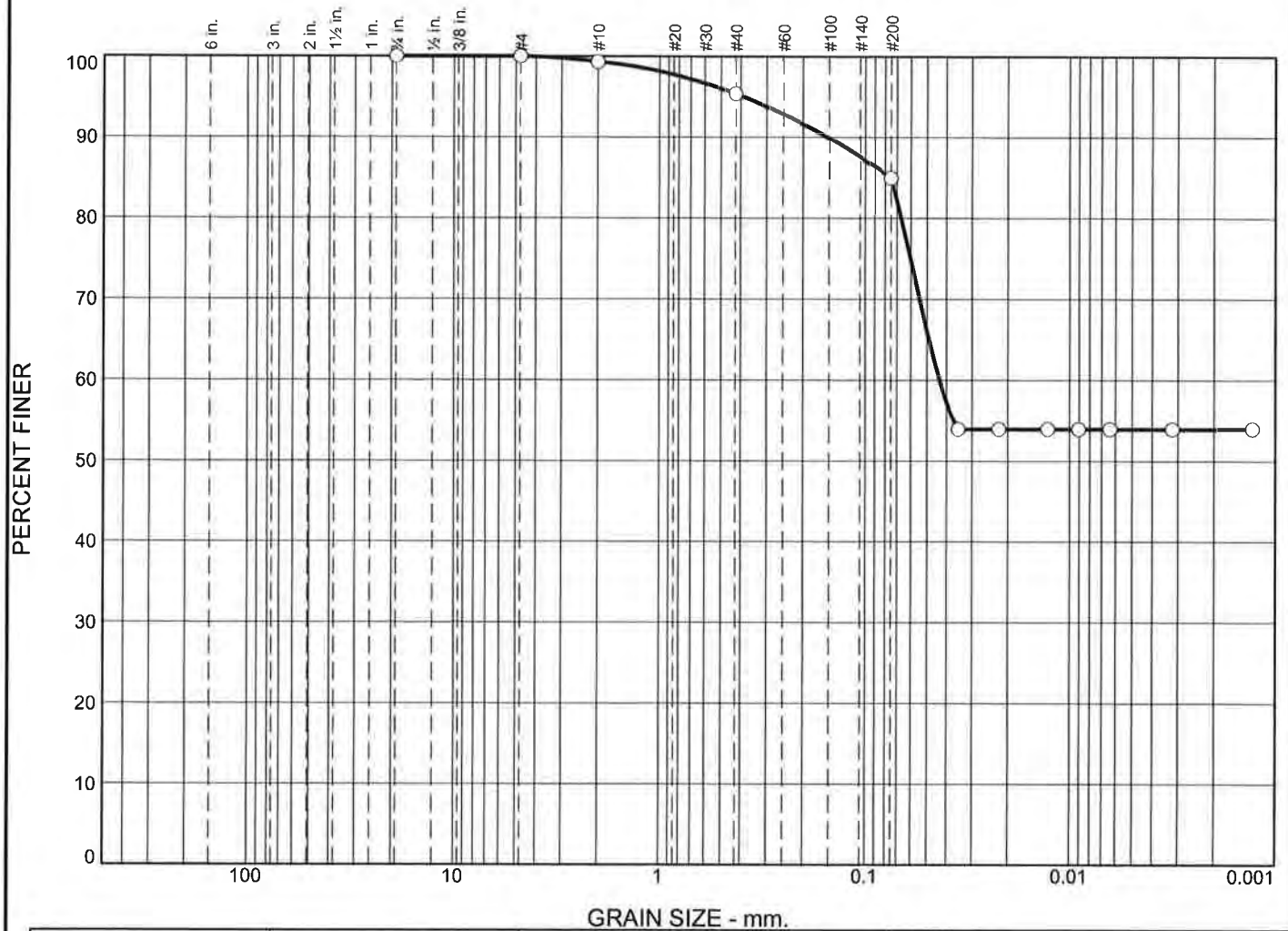
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	4.3	11.4	9.5	25.2	74.1	0.7	74.8

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0410	0.0436	0.0459	0.0481	0.0523	0.0566	0.0611	0.0661	0.2098	0.4745	0.9665	1.8310

Fineness Modulus	C _u	C _c
0.64	1.52	0.95

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"	% Gravel		% Sand			% Fines					
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay				
0.0	0.0	0.0	0.7	4.0	10.3	31.1	53.9				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="checkbox"/>				0.0755	0.0433						
Material Description									USCS		AASHTO
<div> <div>Project No.</div> <div>Client:</div> </div> <div> <div>Project:</div> <div>Source of Sample: NHH-I-BOTTOM Sample Number: L1731355-11</div> </div> <div> <div>Date: <input type="checkbox"/></div> <div>Alpha Analytical</div> <div>Mansfield, MA</div> </div>											
Remarks:											
Figure											

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-I-BOTTOM

Sample Number: L1731355-11

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.12
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
25.12	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.17	0.00	99.3
		#40	1.00	0.00	95.3
		#200	2.61	0.00	85.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 85.0
 Weight of hydrometer sample = 25.72
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0350	53.9
5.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0222	53.9
15.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0128	53.9
30.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0090	53.9
60.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0064	53.9
240.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0032	53.9
1440.00	21.4	1.0100	1.0102	0.0134	10.0	13.6	0.0013	53.9

Fractional Components

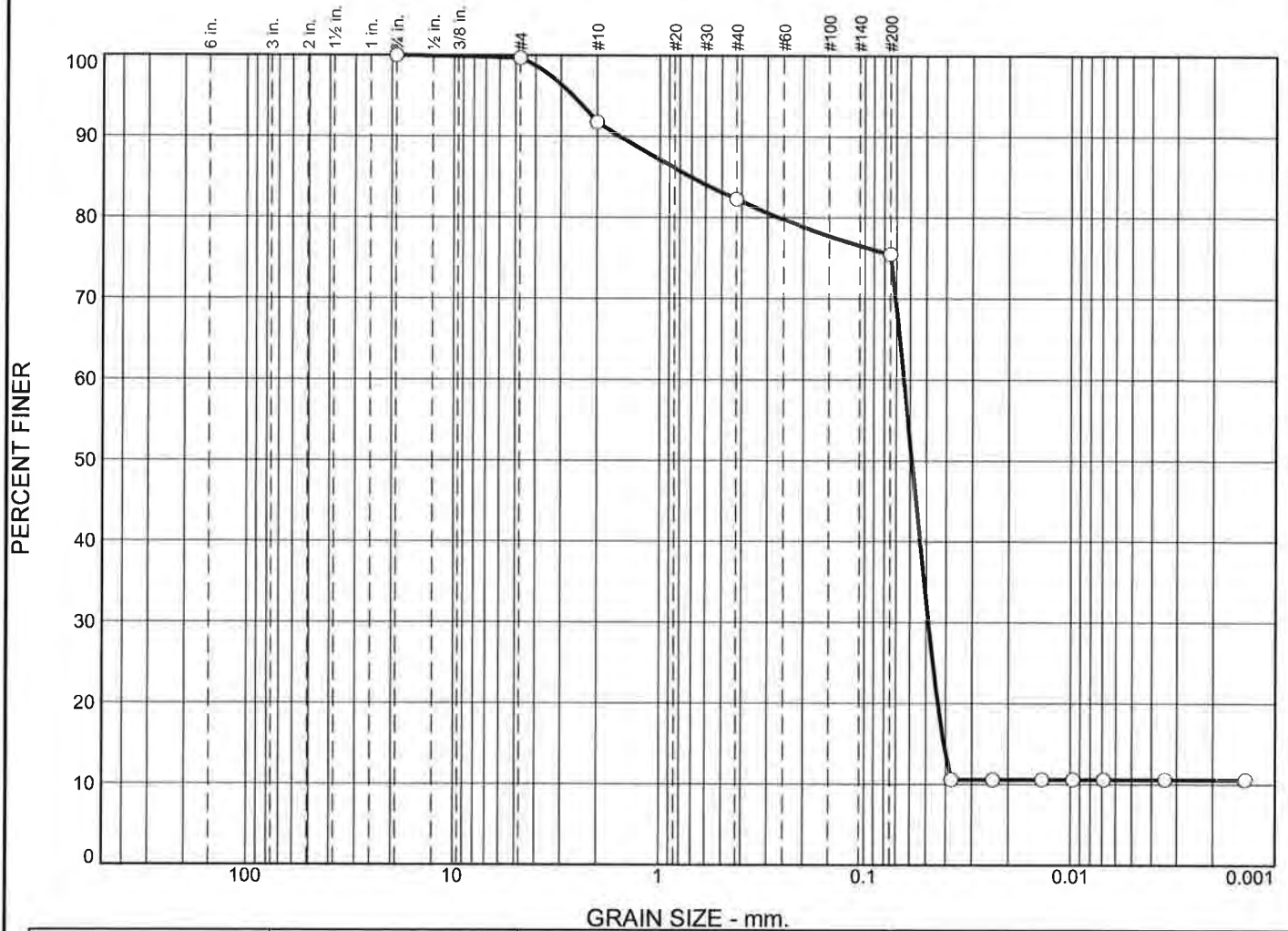
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.7	4.0	10.3	15.0	31.1	53.9	85.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
							0.0433	0.0669	0.0755	0.1535	0.3922

Fineness Modulus

0.22

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-G-TOP

Sample Number: L1731355-12

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.89
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
24.89	0.00	0.75	0.00	0.00	100.0
		#4	0.08	0.00	99.7
		#10	1.98	0.00	91.7
		#40	2.36	0.00	82.2
		#200	1.69	0.00	75.5

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 75.5
 Weight of hydrometer sample = 24.76
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0377	10.6
5.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0238	10.6
15.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0137	10.6
30.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0097	10.6
60.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0069	10.6
240.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0034	10.6
1440.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0014	10.6

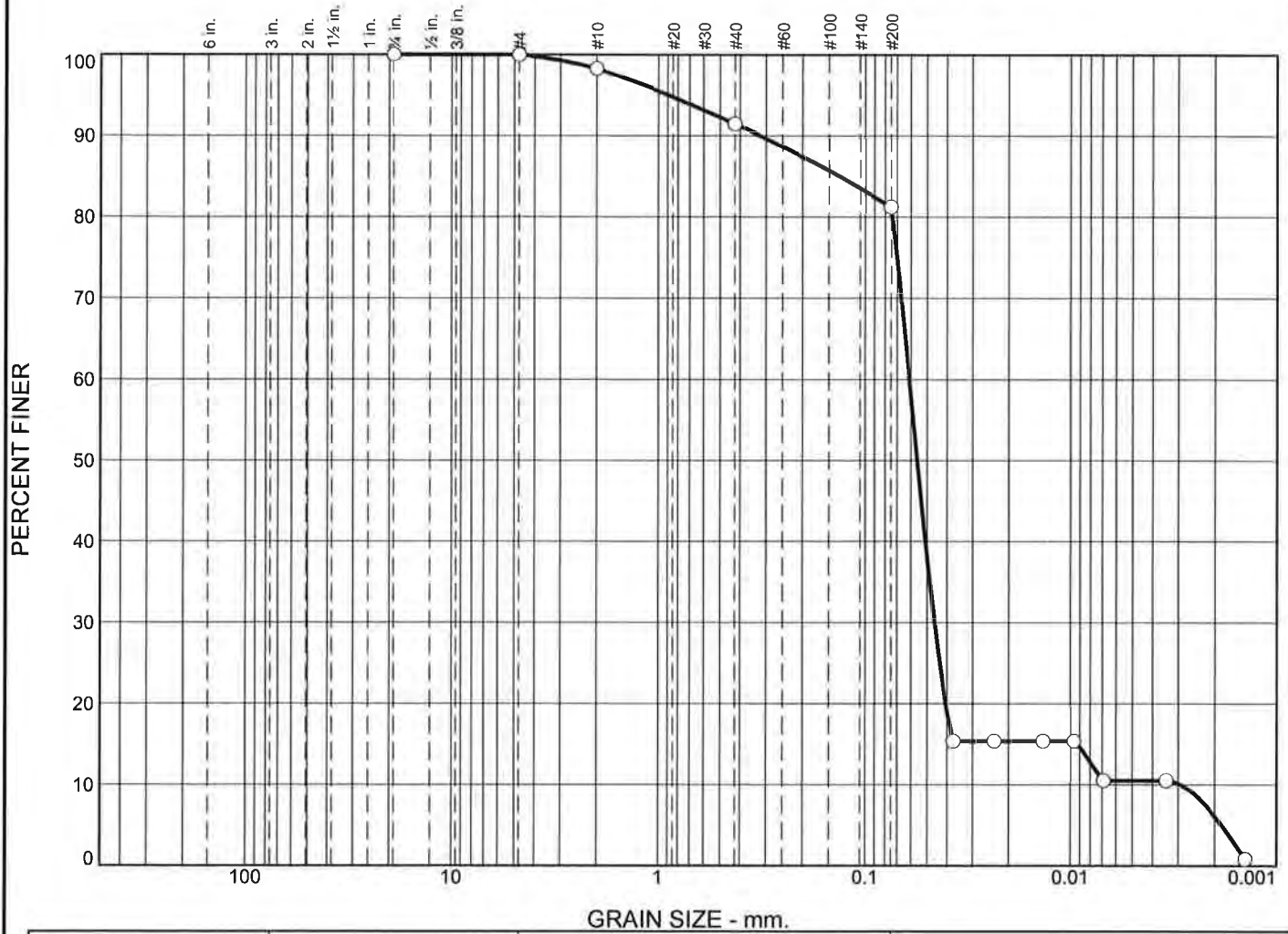
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	8.0	9.5	6.7	24.2	64.9	10.6	75.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0409	0.0437	0.0488	0.0537	0.0588	0.0643	0.2655	0.7068	1.5634	2.6115

Fineness Modulus
0.76

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	0.0	1.7	6.8	10.3	70.7		10.5	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.1352	0.0611	0.0559	0.0461	0.0093	0.0029	11.91	20.94

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-G-BOTTOM Sample Number: L1731355-13 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-G-BOTTOM

Sample Number: L1731355-13

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.12
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
26.12	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.45	0.00	98.3
		#40	1.78	0.00	91.5
		#200	2.68	0.00	81.2

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 81.2
 Weight of hydrometer sample = 26.82
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0030	1.0032	0.0134	3.0	15.5	0.0373	15.4
5.00	21.4	1.0030	1.0032	0.0134	3.0	15.5	0.0236	15.4
15.00	21.4	1.0030	1.0032	0.0134	3.0	15.5	0.0136	15.4
30.00	21.4	1.0030	1.0032	0.0134	3.0	15.5	0.0096	15.4
60.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0069	10.5
240.00	21.4	1.0020	1.0022	0.0134	2.0	15.8	0.0034	10.5
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.7	6.8	10.3	18.8	70.7	10.5	81.2

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0019	0.0029	0.0093	0.0407	0.0461	0.0510	0.0559	0.0611	0.0740	0.1352	0.3216	0.8919

Fineness Modulus	C _u	C _c
0.37	20.94	11.91

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	3.4	3.0	15.3	54.2	22.9		1.2	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.6519	0.2020	0.1478	0.0866	0.0604	0.0532	0.70	3.80

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-C-TOP Sample Number: L1731355-14 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-C-TOP

Sample Number: L1731355-14

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.05
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
38.05	0.00	0.75	0.00	0.00	100.0
		#4	1.30	0.00	96.6
		#10	1.12	0.00	93.6
		#40	5.85	0.00	78.3
		#200	20.62	0.00	24.1

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 24.1
 Weight of hydrometer sample = 37.87
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0380	1.2
5.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0240	1.2
15.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0139	1.2
30.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0098	1.2
60.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0069	1.2
240.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0035	1.2
1440.00	21.4	1.0010	1.0012	0.0134	1.0	16.0	0.0014	1.2

Fractional Components

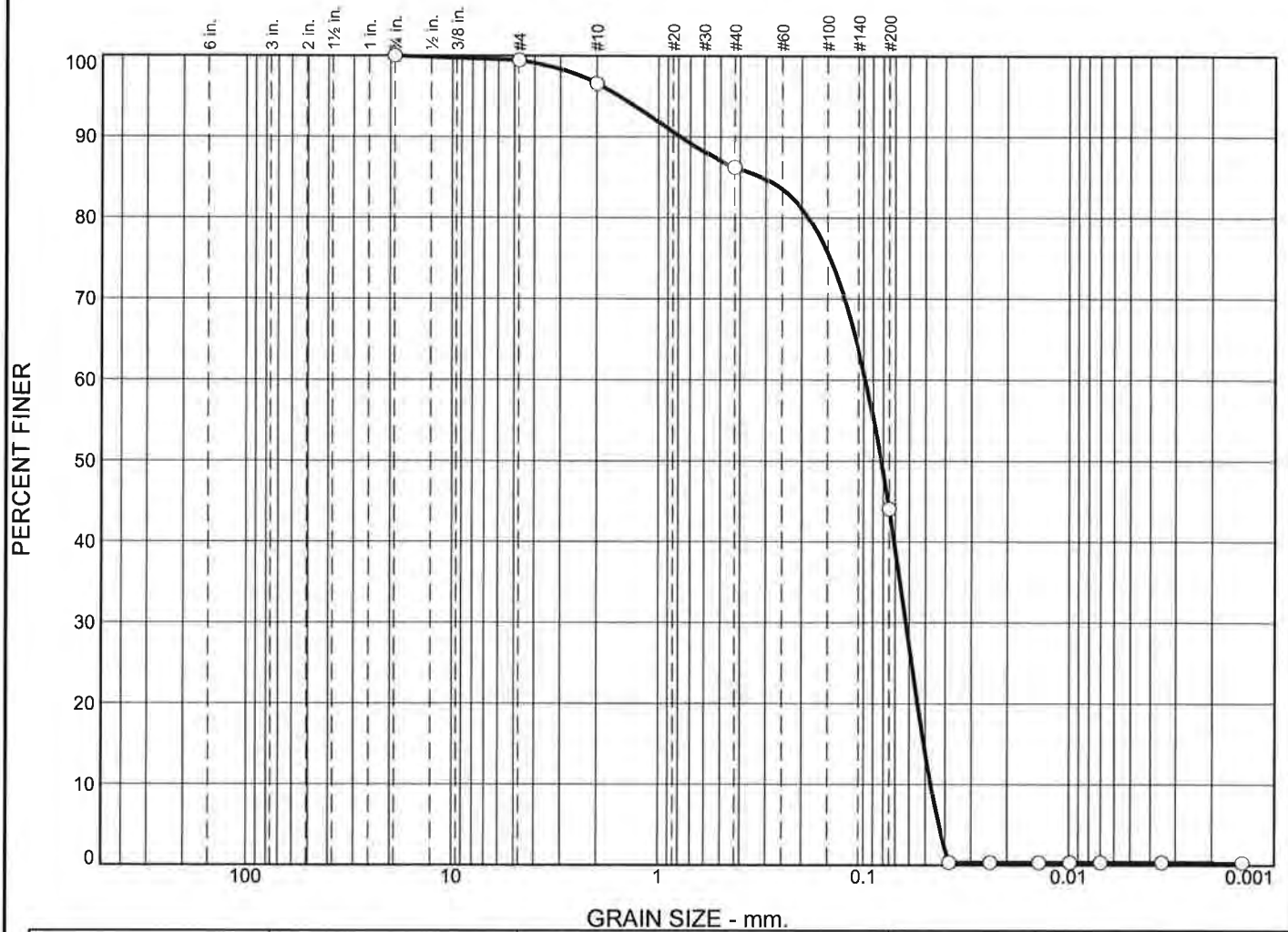
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.4	3.4	3.0	15.3	54.2	72.5	22.9	1.2	24.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0456	0.0532	0.0604	0.0681	0.0866	0.1118	0.1478	0.2020	0.4676	0.6519	1.0666	2.8396

Fineness Modulus	C _u	C _c
1.15	3.80	0.70

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>	0.0	0.0	0.6	2.8	10.4	42.1	43.8	0.3			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.3206	0.0981	0.0820	0.0622	0.0509	0.0472	0.84	2.08

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-C-BOTTOM Sample Number: L1731355-15 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-C-BOTTOM

Sample Number: L1731355-15

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.00
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
34.00	0.00	0.75	0.00	0.00	100.0
		#4	0.19	0.00	99.4
		#10	0.98	0.00	96.6
		#40	3.52	0.00	86.2
		#200	14.33	0.00	44.1

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 44.1
 Weight of hydrometer sample = 33.37
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.3
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.3
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.3
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.3
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.3
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.3
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.3

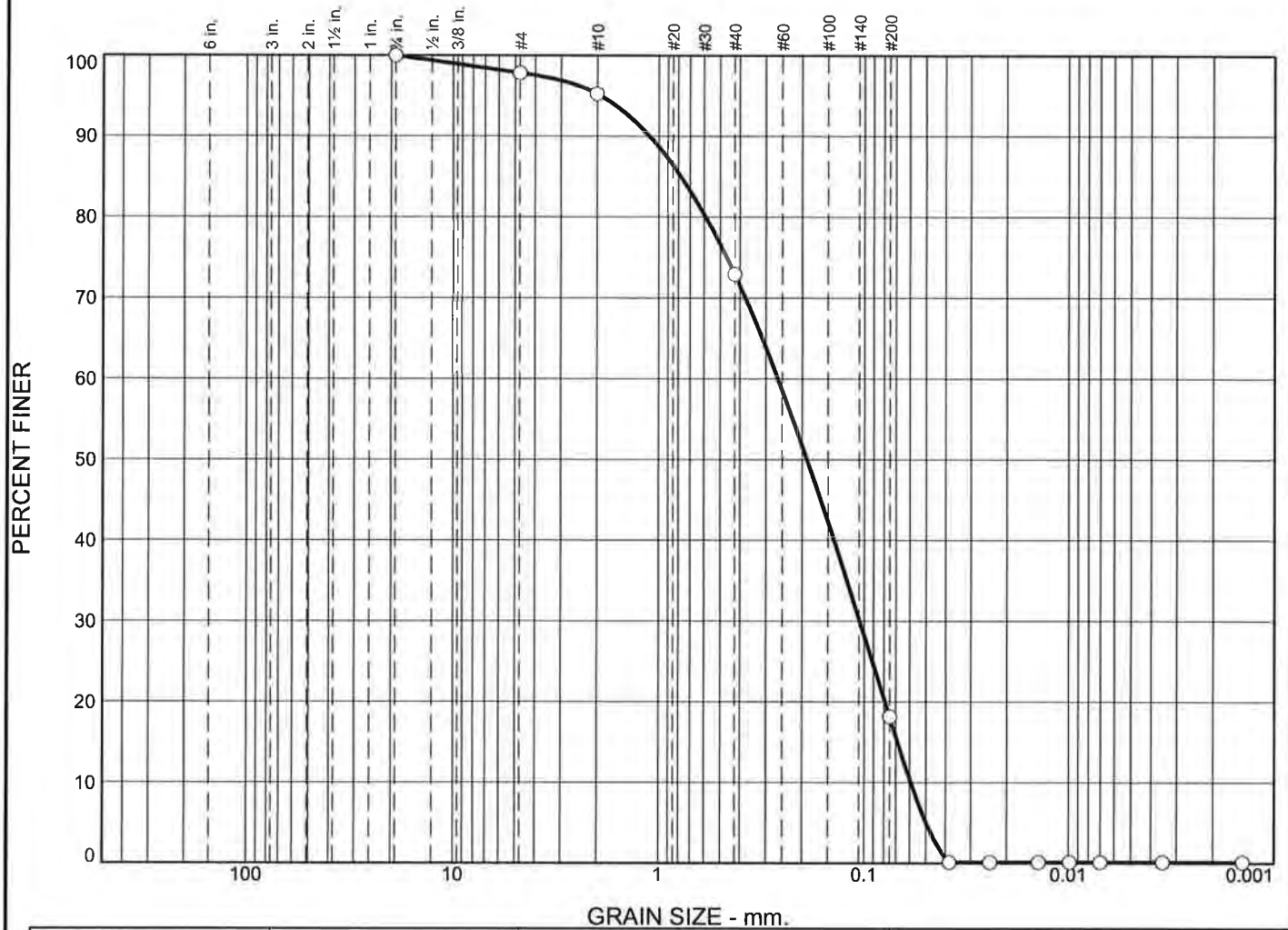
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.6	0.6	2.8	10.4	42.1	55.3	43.8	0.3	44.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0431	0.0472	0.0509	0.0546	0.0622	0.0709	0.0820	0.0981	0.1863	0.3206	0.7827	1.5493

Fineness Modulus	C _u	C _c
0.62	2.08	0.84

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	2.2	2.6	22.3	54.8	18.0		0.1	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.7790	0.2625	0.1899	0.1050	0.0686	0.0591	0.71	4.44

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-B Sample Number: L1731355-16 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-B

Sample Number: L1731355-16

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 39.56
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
39.56	0.00	0.75	0.00	0.00	100.0
		#4	0.86	0.00	97.8
		#10	1.04	0.00	95.2
		#40	8.81	0.00	72.9
		#200	21.67	0.00	18.1

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 18.1
 Weight of hydrometer sample = 39.06
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.1
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.1
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.1
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.1
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.1
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.1
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.2	2.2	2.6	22.3	54.8	79.7	18.0	0.1	18.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0498	0.0591	0.0686	0.0790	0.1050	0.1404	0.1899	0.2625	0.5886	0.7790	1.1123	1.9356

Fineness Modulus	C _u	C _c
1.30	4.44	0.71

Alpha Analytical

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.0	6.0	4.5	21.0	50.1	18.3		0.1	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.2093	0.2941	0.2020	0.1054	0.0679	0.0586	0.64	5.02

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-B Sample Number: WG1040348-1 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-B

Sample Number: WG1040348-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.38
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
38.38	0.00	0.75	0.00	0.00	100.0
		#4	2.32	0.00	94.0
		#10	1.70	0.00	89.5
		#40	8.08	0.00	68.5
		#200	19.20	0.00	18.4

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 18.4
 Weight of hydrometer sample = 39.18
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.1
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.1
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.1
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.1
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.1
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.1
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.1

Fractional Components

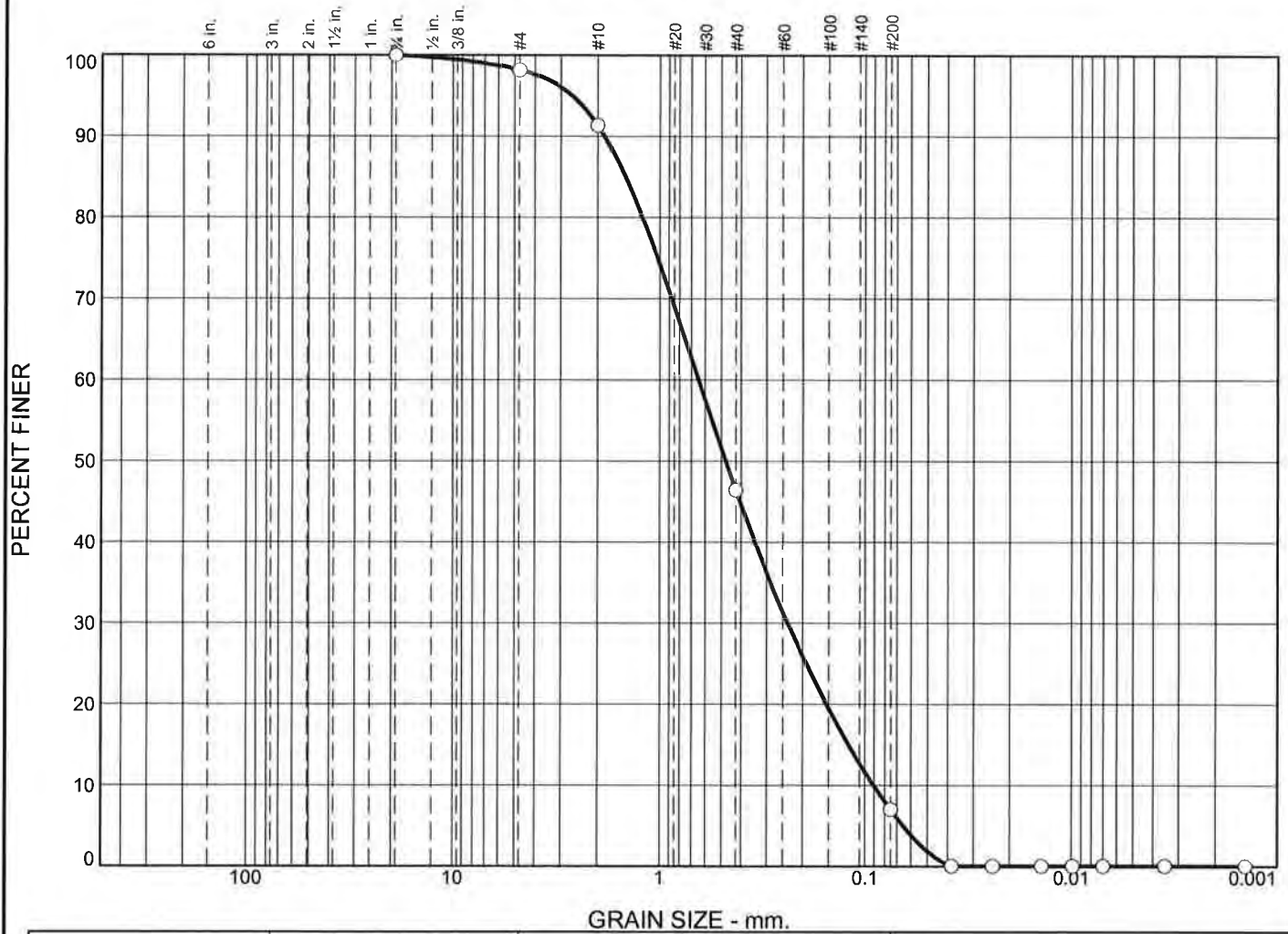
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	6.0	6.0	4.5	21.0	50.1	75.6	18.3	0.1	18.4

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0495	0.0586	0.0679	0.0784	0.1054	0.1441	0.2020	0.2941	0.8156	1.2093	2.1428	6.0786

Fineness Modulus	C _u	C _c
1.57	5.02	0.64

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>	0.0	0.0	1.9	6.8	44.9	39.4	7.0	0.0			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				1.4734	0.6451	0.4759	0.2368	0.1198	0.0905	0.96	7.13

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-A-TOP Sample Number: L1731355-17 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-A-TOP

Sample Number: L1731355-17

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 46.40
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
46.40	0.00	0.75	0.00	0.00	100.0
		#4	0.87	0.00	98.1
		#10	3.15	0.00	91.3
		#40	20.84	0.00	46.4
		#200	18.28	0.00	7.0

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 7.0
 Weight of hydrometer sample = 42.00
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.0
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.0
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.0
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.0
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.0
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.0
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.0

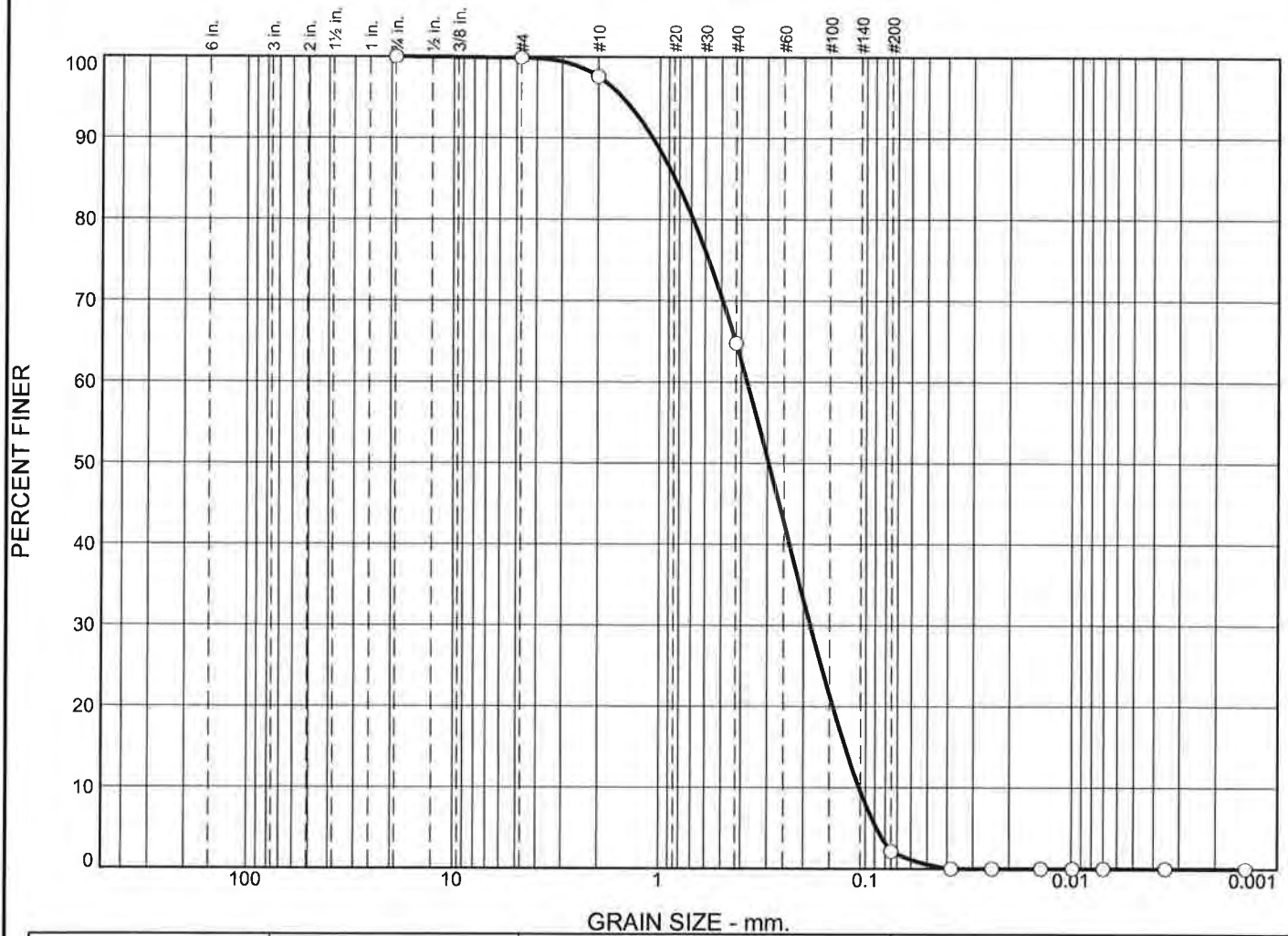
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.9	1.9	6.8	44.9	39.4	91.1	7.0	0.0	7.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0652	0.0905	0.1198	0.1537	0.2368	0.3430	0.4759	0.6451	1.2180	1.4734	1.8550	2.6526

Fineness Modulus	C _u	C _c
2.16	7.13	0.96

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.1	2.3	32.9	62.6	2.1		0.0		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.8423	0.3759	0.2954	0.1858	0.1259	0.1075	0.85	3.50

Material Description							USCS	AASHTO
<input type="radio"/>							SP	

Project No. Project: <input type="radio"/> Source of Sample: NHH-A-BOTTOM Sample Number: L1731355-18 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks:
Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-A-BOTTOM

Sample Number: L1731355-18

USCS Classification: SP

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 44.68
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
44.68	0.00	0.75	0.00	0.00	100.0
		#4	0.06	0.00	99.9
		#10	1.03	0.00	97.6
		#40	14.67	0.00	64.7
		#200	27.96	0.00	2.1

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 2.1

Weight of hydrometer sample = 44.88

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.0
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.0
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.0
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.0
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.0
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.0
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.0

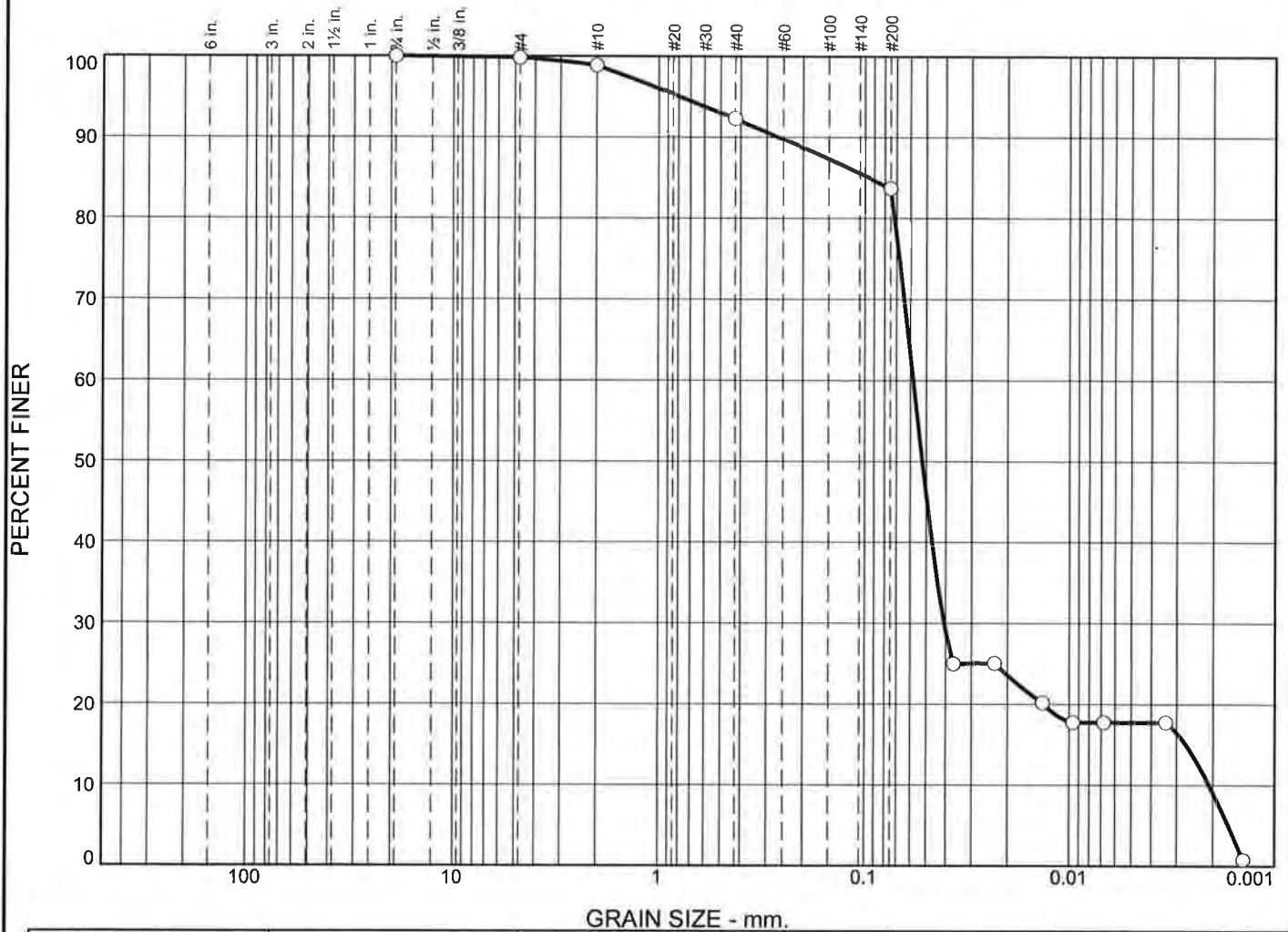
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	2.3	32.9	62.6	97.8	2.1	0.0	2.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0882	0.1075	0.1259	0.1447	0.1858	0.2346	0.2954	0.3759	0.6869	0.8423	1.0808	1.5221

Fineness Modulus	C _u	C _c
1.62	3.50	0.85

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.2	0.9	6.7	8.5	65.9		17.8		
<input type="checkbox"/>											
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.0966	0.0579	0.0523	0.0407	0.0027	0.0021	13.72	27.78
<input type="checkbox"/>											

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-D-TOP Sample Number: L1731355-19 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-D-TOP

Sample Number: L1731355-19

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 28.06
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
28.06	0.00	0.75	0.00	0.00	100.0
		#4	0.05	0.00	99.8
		#10	0.27	0.00	98.9
		#40	1.86	0.00	92.2
		#200	2.40	0.00	83.7

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 83.7
 Weight of hydrometer sample = 27.72
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0050	1.0052	0.0134	5.0	15.0	0.0367	25.0
5.00	21.4	1.0050	1.0052	0.0134	5.0	15.0	0.0232	25.0
15.00	21.4	1.0040	1.0042	0.0134	4.0	15.2	0.0135	20.2
30.00	21.4	1.0035	1.0037	0.0134	3.5	15.4	0.0096	17.8
60.00	21.4	1.0035	1.0037	0.0134	3.5	15.4	0.0068	17.8
240.00	21.4	1.0035	1.0037	0.0134	3.5	15.4	0.0034	17.8
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.9	6.7	8.5	16.1	65.9	17.8	83.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0017	0.0021	0.0027	0.0133	0.0407	0.0467	0.0523	0.0579	0.0717	0.0966	0.2639	0.7903

Fineness Modulus	C _u	C _c
0.33	27.78	13.72

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	0.9	5.2	10.5	82.6		0.8		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.0930	0.0629	0.0587	0.0510	0.0452	0.0431	0.96	1.46

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Project: <input type="radio"/> Source of Sample: NHH-D-BOTTOM Sample Number: L1731355-20 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-D-BOTTOM

Sample Number: L1731355-20

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 28.14
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
28.14	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.25	0.00	99.1
		#40	1.47	0.00	93.9
		#200	2.94	0.00	83.4

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 83.4
 Weight of hydrometer sample = 28.34
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0383	0.8
5.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0242	0.8
15.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0140	0.8
30.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0099	0.8
60.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0070	0.8
240.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0035	0.8
1440.00	21.4	1.0000	1.0002	0.0134	0.0	16.3	0.0014	0.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.9	5.2	10.5	16.6	82.6	0.8	83.4

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0407	0.0431	0.0452	0.0472	0.0510	0.0548	0.0587	0.0629	0.0729	0.0930	0.2019	0.5466

Fineness Modulus	C _u	C _c
0.27	1.46	0.96

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0	0.0	0.0	18.2	9.0	5.7	66.1		1.0		
<input checked="" type="radio"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				2.3018	0.0693	0.0627	0.0517	0.0439	0.0410	0.94	1.69

Material Description							USCS	AASHTO
<input type="radio"/>								

Project No. Project: <input type="radio"/> Source of Sample: NHH-F-TOP Sample Number: L1731355-21 Date: <input type="radio"/>	Client: Alpha Analytical Mansfield, MA	Remarks:
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Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-F-TOP

Sample Number: L1731355-21

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.44
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.44	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	4.27	0.00	81.8
		#40	2.11	0.00	72.8
		#200	1.34	0.00	67.1

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 67.1

Weight of hydrometer sample = 24.69

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0378	5.3
5.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0241	1.0
15.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0139	1.0
30.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0098	1.0
60.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0070	1.0
240.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0035	1.0
1440.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0014	1.0

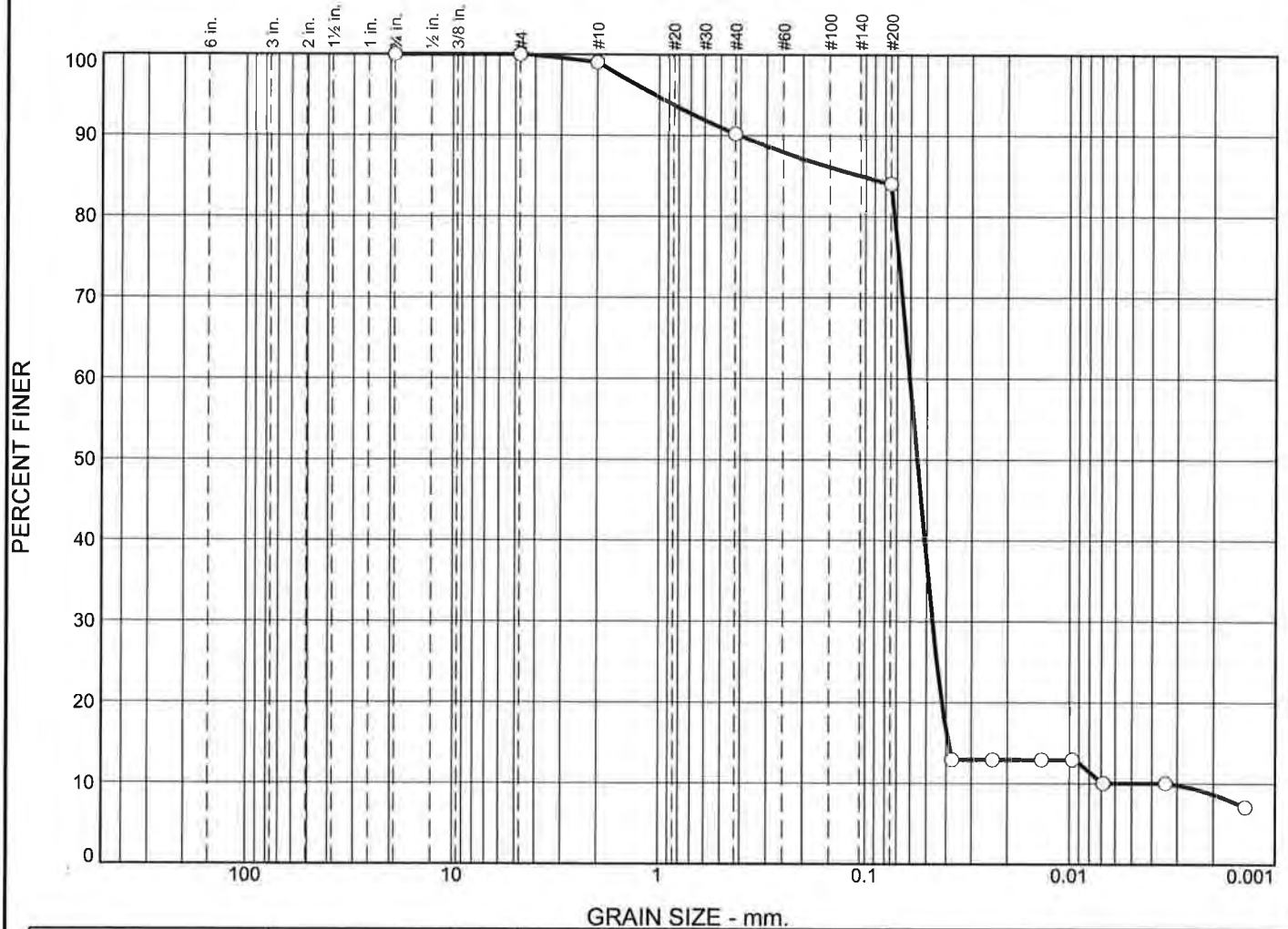
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	18.2	9.0	5.7	32.9	66.1	1.0	67.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0369	0.0410	0.0439	0.0465	0.0517	0.0569	0.0627	0.0693	1.5385	2.3018	2.8497	3.5743

Fineness Modulus	C _u	C _c
1.22	1.69	0.94

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE ANALYSIS											
	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
○	0.0		0.0	0.0	1.0	8.8	6.2	74.0		10.0	
✕	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.1073	0.0605	0.0557	0.0467	0.0390	0.0033	10.84	18.18

Material Description	USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-F-REP-TOP Sample Number: L1731355-22 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-F-REP-TOP

Sample Number: L1731355-22

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.20
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
24.20	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.24	0.00	99.0
		#40	2.13	0.00	90.2
		#200	1.49	0.00	84.0

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 84.0

Weight of hydrometer sample = 23.14

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0020	1.0022	0.0133	2.0	15.8	0.0375	13.0
5.00	21.8	1.0020	1.0022	0.0133	2.0	15.8	0.0237	13.0
15.00	21.8	1.0020	1.0022	0.0133	2.0	15.8	0.0137	13.0
30.00	21.8	1.0020	1.0022	0.0133	2.0	15.8	0.0097	13.0
60.00	21.8	1.0015	1.0017	0.0133	1.5	15.9	0.0069	10.0
240.00	21.8	1.0015	1.0017	0.0133	1.5	15.9	0.0034	10.0
1440.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0014	7.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.0	8.8	6.2	16.0	74.0	10.0	84.0

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0033	0.0390	0.0419	0.0467	0.0512	0.0557	0.0605	0.0721	0.1073	0.4065	1.0558

Fineness Modulus	C _u	C _c
0.38	18.18	10.84

Alpha Analytical

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-F-BOTTOM

Sample Number: L1731355-23

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.52
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.52	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.55	0.00	97.7
		#40	0.62	0.00	95.0
		#200	0.50	0.00	92.9

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 92.9
 Weight of hydrometer sample = 22.75
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0378	8.0
5.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0239	8.0
15.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0138	8.0
30.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0098	8.0
60.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0069	8.0
240.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0034	8.0
1440.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0014	1.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.3	2.7	2.1	7.1	84.9	8.0	92.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0021	0.0390	0.0415	0.0437	0.0476	0.0513	0.0551	0.0590	0.0678	0.0704	0.0732	0.4177

Fineness Modulus	C _u	C _c
0.22	1.51	0.99

Particle Size Distribution Report



GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-F-BOTTOM

Sample Number: WG1046682-2

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.48
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
20.48	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.32	0.00	98.4
		#40	0.51	0.00	95.9
		#200	0.41	0.00	93.9

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 93.9
 Weight of hydrometer sample = 23.26
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0381	1.4
5.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0241	1.4
15.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0139	1.4
30.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0098	1.4
60.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0070	1.4
240.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0035	1.4
1440.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0014	1.4

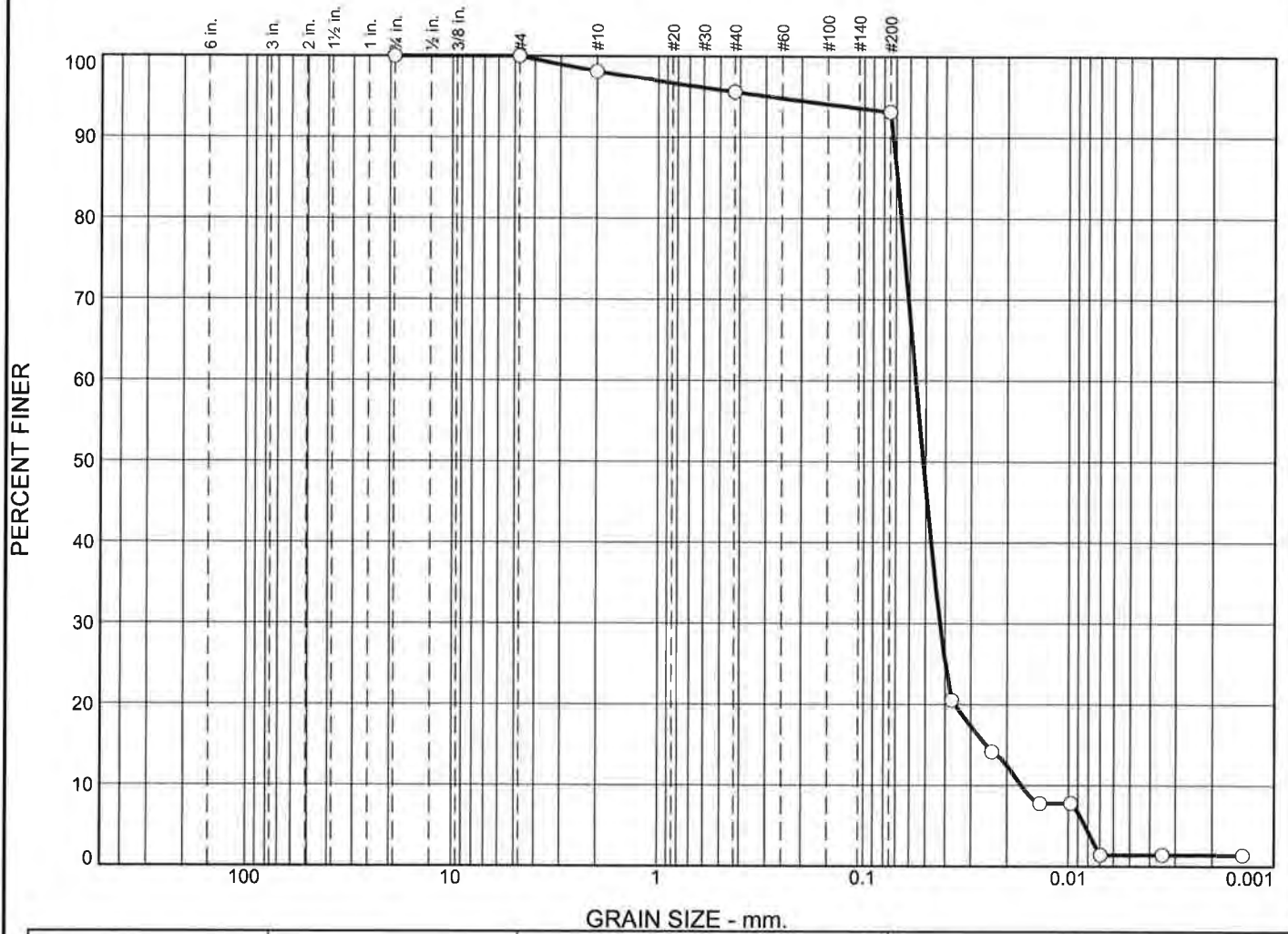
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.6	2.5	2.0	6.1	92.5	1.4	93.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0400	0.0422	0.0442	0.0460	0.0494	0.0528	0.0562	0.0598	0.0679	0.0703	0.0728	0.2042

Fineness Modulus	C _u	C _c
0.17	1.42	0.97

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.9	2.5	2.5	91.7	1.4

Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			0.0692	0.0559	0.0514	0.0424	0.0252	0.0171	1.89	3.28

Material Description	USCS	AASHTO

Project No. Project: ○ Source of Sample: NHH-E-TOP Sample Number: L1731355-24 Date: ○	Client: Alpha Analytical Mansfield, MA	Remarks: Figure
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GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-E-TOP

Sample Number: L1731355-24

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.81
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
24.81	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.47	0.00	98.1
		#40	0.62	0.00	95.6
		#200	0.61	0.00	93.1

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 93.1
 Weight of hydrometer sample = 23.46
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	R _m	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0030	1.0032	0.0133	3.0	15.5	0.0372	20.5
5.00	21.8	1.0020	1.0022	0.0133	2.0	15.8	0.0237	14.2
15.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0138	7.8
30.00	21.8	1.0010	1.0012	0.0133	1.0	16.0	0.0098	7.8
60.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0070	1.4
240.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0035	1.4
1440.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0014	1.4

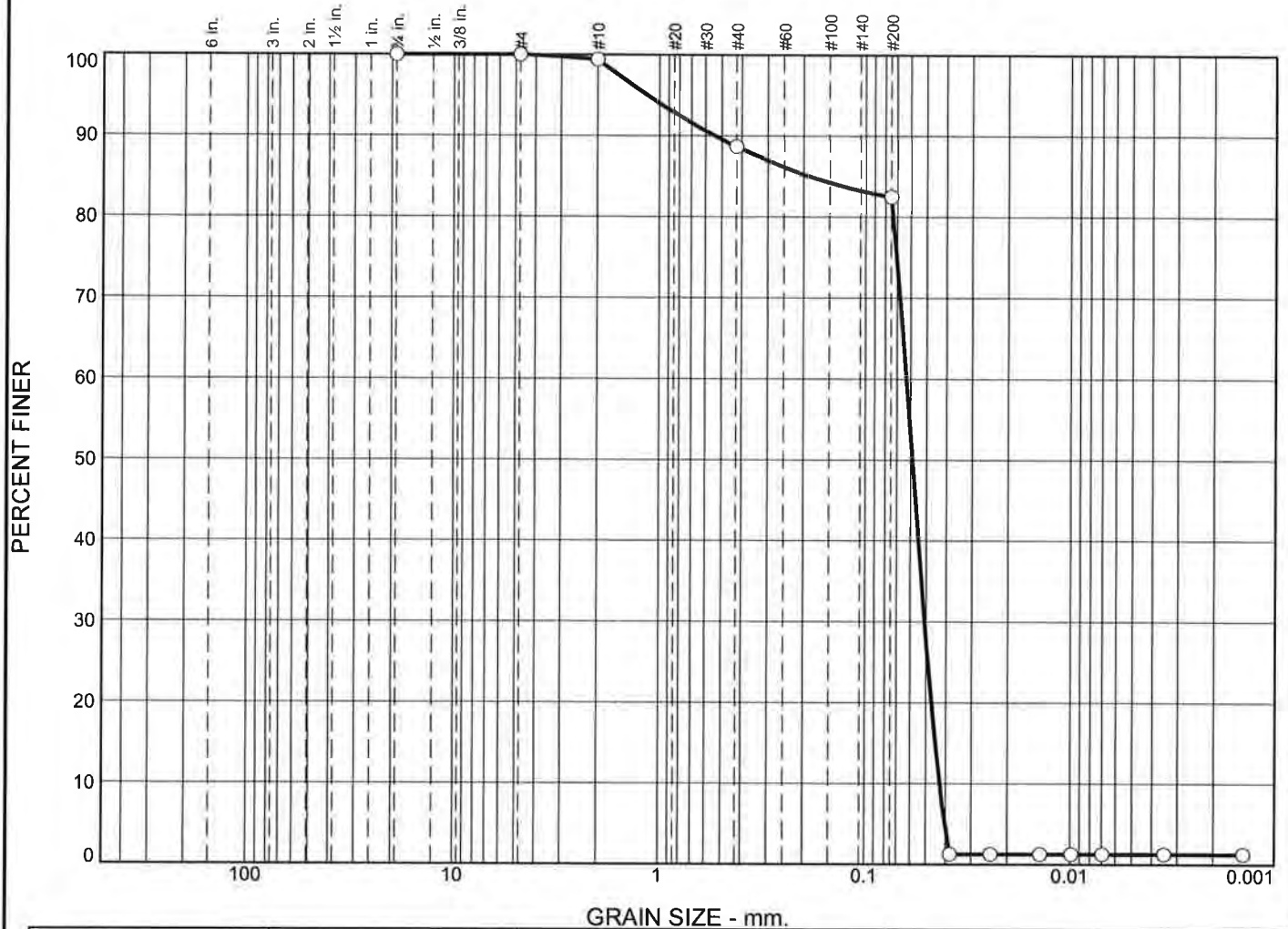
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.9	2.5	2.5	6.9	91.7	1.4	93.1

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0083	0.0171	0.0252	0.0358	0.0424	0.0470	0.0514	0.0559	0.0662	0.0692	0.0726	0.2834

Fineness Modulus	C _u	C _c
0.19	3.28	1.89

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay		
<input type="radio"/>	0.0		0.0	0.0	0.6	10.7	6.2	81.2		1.3	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.1891	0.0630	0.0587	0.0508	0.0449	0.0428	0.96	1.47

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. Client: Project: <input type="radio"/> Source of Sample: NHH-E-BOTTOM Sample Number: L1731355-25 Date: <input type="radio"/>	Remarks:
Alpha Analytical Mansfield, MA	Figure

GRAIN SIZE DISTRIBUTION TEST DATA

10/3/2017

Location: NHH-E-BOTTOM

Sample Number: L1731355-25

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.90
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
23.90	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.14	0.00	99.4
		#40	2.57	0.00	88.7
		#200	1.48	0.00	82.5

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 82.5
 Weight of hydrometer sample = 23.35
 Automatic temperature correction
 Composite correction (fluid density and meniscus height) at 20 deg. C = 0
 Meniscus correction only = 0.0
 Specific gravity of solids = 2.65
 Hydrometer type = 151H
 Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0381	1.3
5.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0241	1.3
15.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0139	1.3
30.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0098	1.3
60.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0070	1.3
240.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0035	1.3
1440.00	21.8	1.0000	1.0002	0.0133	0.0	16.3	0.0014	1.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.6	10.7	6.2	17.5	81.2	1.3	82.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0403	0.0428	0.0449	0.0470	0.0508	0.0547	0.0587	0.0630	0.0734	0.1891	0.5398	1.1490

Fineness Modulus	C _u	C _c
0.43	1.47	0.96

Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	N/A
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	N/A
15. Were the SRM/CRM analyses within acceptance criteria?	N/A
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	N/A
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	N/A
19. Were surrogate recoveries within the required acceptance criteria?	N/A



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check			Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	No	WG1046682-1 % coarse sand (36%) and % clay fine (140%), WG1040348-1 % fine gravel (93%), gravel (93%) and % coarse sand (54%)	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	N/A		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

kb 9/7/17 L1731355

Page 1 of 2

Client/Project Name:
WACE-MHH-FMP

Project Location:

New Haven, CT

Project Number:

60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):

C. Steve Hone / AECOM

Chain of Custody Tape Nos.:

Signature:

Send Results/Report to:

TAT:

Analysis Requested

RIM Hydrometer

Container Type

P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation

1 - HCl, 4°
2 - H₂SO₄, 4°
3 - HNO₃, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na₂S₂O₃, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification

Date

Time

COMP

GRAB

Sample Container (Size/Mat'l)

Matrix

Preserv.

Field Filtered

Grain Size

Metals - 6030A / 7471B

PCBS - 8032 / 8210 SW

Residues - 8032

PAHs - 8200 SW

TOC - 9060

Lab I.D.

Remarks

NHH-R-Top

8/14/17

0832

X

80Z/160Z

SD

4°C

NA

X

X

X

X

X

X

NHH-R-Bottom

0832

X

"

SD

4°C

X

X

X

X

X

X

NHH-S-Top

0955

X

"

SD

4°C

X

X

X

X

X

X

NHH-S-Bottom

0955

X

80Z

SD

4°C

X

NHH-J

1141

X

80Z/160Z

SD

4°C

X

NHH-L

1300

X

"

SD

4°C

X

X

X

X

X

X

NHH-K-Top

1409

X

80Z/160Z

SD

4°C

X

X

X

X

X

X

NHH-K-Bottom

1409

X

80Z

SD

4°C

X

NHH-H-Top

1458

X

80Z/160Z

SD

4°C

X

X

X

X

X

X

NHH-H-Rep-Top

1458

X

"

SD

4°C

X

X

X

X

X

X

NHH-H-Bottom

1458

X

"

SD

4°C

X

X

X

X

X

X

NHH-I-Top

1548

X

"

SD

4°C

X

X

X

X

X

X

NHH-I-Bottom

1548

X

"

SD

4°C

X

X

X

X

X

X

Rel

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CHAIN OF CUSTODY RECORD

~~L1728229~~Page 1 of 2

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven CT		Analysis Requested		Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encode		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number: 60543021		Field Logbook No.:							
Sampler (Print Name)/(Affiliation): C. Steve Hone AECOM		Chain of Custody Tape Nos.:							
Signature: <i>C. Steve Hone</i>		Send Results/Report to:		TAT:					

Matrix Codes:

DW - Drinking Water
 WW - Wastewater
 GW - Groundwater
 SW - Surface Water
 ST - Storm Water
 W - Water

S - Soil
 SL - Sludge
 SD - Sediment
 SO - Solid
 A - Air
 L - Liquid
 P - Product

RIM Hydrometer

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Lab I.D.	Remarks
NHH-G-Top	8/11/17	0837	X		802/1602 SD	4°C	NA	X	X	0-4'3"
NHH-G-Bottom	8/11/17	0837	X		802/1602 SD	4°C		X	X	4'3"-13'8"
NHH-C-Top		1033	X		802/1602 SD	4°C		X	X	0-2'10"
NHH-C-Bottom		1033	X		802/1602 SD	4°C		X	X	2'10"-8'0"
NHH-B		1157	X		Ziploc/1602 SD	4°C		X	X	0-4'2'
NHH-B-MS		1157	X		Ziploc/1602 SD	4°C		X	X	0-4'2'
NHH-B-MSD		1157	X		Ziploc/1602 SD	4°C		X	X	0-4'2'
NHH-A-Top		1340	X		802/1602 SD	4°C		X	X	0-2'2"
NHH-A-Bottom		1340	X		802/1602 SD	4°C		X	X	2'2"-9'9"
NHH-D-Top		1507	X		802/1602 SD	4°C		X	X	0-4'9"
NHH-D-Bottom		1507	X		802/1602 SD	4°C		X	X	4'9"-10'4"
NHH-F-Top		1650	X		802/1602 SD	4°C		X	X	0-3'2"
NHH-F-Rep-Top		1650	X		802/1602 SD	4°C		X	X	0-3'2"

Relinquished by: (Print Name)/(Affiliation)

C. Steve Hone AECOM

Date: 8/11/17

Time: 1925

Signature:

Relinquished by: (Print Name)/(Affiliation)

A. Smith

Date: 8/11/17

Time: 2237

Signature:

Relinquished by: (Print Name)/(Affiliation)

Date:

Time:

Signature:

Received by: (Print Name)/(Affiliation)

A. Smith

Date: 8/11/17

Time: 1925

Signature:

Received by: (Print Name)/(Affiliation)

B. B. Baker

Date: 8/11/17

Time: 2237

Signature:

Received by: (Print Name)/(Affiliation)

Date:

Time:

Signature:

Analytical Laboratory (Destination):

Sample Shipped Via:

UPS FedEx Courier Other

Temp blank

Yes No

CHAIN OF CUSTODY RECORD

Page 2 of 2

		Date	Time	M P	A B	Container (Size/Mat'l)	Matrix	Preserv.	Filtered	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461
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Serial No:10051713:01

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CHAIN OF CUSTODY RECORD

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Appendix D Backup Chemistry Laboratory Data

Bulk Sediment Chemistry Data



ANALYTICAL REPORT

Lab Number:	L1727562
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	08/29/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1727562-01	NHH-X-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727562-02	NHH-X-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727562-03	NHH-X-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 09:22	08/08/17
L1727562-04	NHH-Y-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 10:37	08/08/17
L1727562-05	NHH-Z-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1727562-06	NHH-Z-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 11:53	08/08/17
L1727562-07	NHH-N-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 13:05	08/08/17
L1727562-08	NHH-O-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 14:45	08/08/17
L1727562-09	NHH-M	SEDIMENT	NEW HAVEN, CT	08/08/17 16:10	08/08/17
L1727562-10	NHH-T-TOP	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17
L1727562-11	NHH-T-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/08/17 17:34	08/08/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics

L1727562-01 and -02: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

The WG1031095-5 Laboratory Duplicate RPDs for cl4-bz#52 (44%) and cl7-bz#170 (34%), performed on L1727562-07, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

Pesticides

The WG1031089-4 SRM recovery for trans-Nonachlor (220%) and the surrogate BZ 198 column B (159%), are above the acceptance criteria.

Total Metals

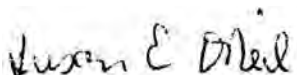
The WG1034116-5 Laboratory Duplicate RPDs for cadmium (25%), chromium (36%), copper (25%), lead (21%), nickel (25%) and zinc (24%), performed on L1727562-07, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

Total Organic Carbon

The WG1036551-5 MS recovery for total organic carbon (rep1) (60%) performed on L1727562-07, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria indicating the sample batch was in control, and all sample results were accepted.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Susan O'Neil

Title: Technical Director/Representative

Date: 08/29/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-01
 Client ID: NHH-X-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 00:45
 Analyst: GP
 Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	256		ug/kg	13.6	6.80	1
Acenaphthylene	221		ug/kg	13.6	6.80	1
Acenaphthene	303		ug/kg	13.6	6.80	1
Fluorene	263		ug/kg	13.6	6.80	1
Phenanthrene	924		ug/kg	13.6	6.80	1
Anthracene	364		ug/kg	13.6	6.80	1
Fluoranthene	2800	E	ug/kg	13.6	6.80	1
Pyrene	2240		ug/kg	13.6	6.80	1
Benz(a)anthracene	1140		ug/kg	13.6	6.80	1
Chrysene	1040		ug/kg	13.6	6.80	1
Benzo(b)fluoranthene	1130		ug/kg	13.6	6.80	1
Benzo(k)fluoranthene	746		ug/kg	13.6	6.80	1
Benzo(a)pyrene	853		ug/kg	13.6	6.80	1
Indeno(1,2,3-cd)Pyrene	592		ug/kg	13.6	6.80	1
Dibenz(a,h)anthracene	175		ug/kg	13.6	6.80	1
Benzo(ghi)perylene	650		ug/kg	13.6	6.80	1
Cl2-BZ#8	12.0		ug/kg	1.36	0.680	1
Cl3-BZ#18	42.8		ug/kg	1.36	0.680	1
Cl3-BZ#28	69.5		ug/kg	1.36	0.680	1
Cl4-BZ#44	46.5		ug/kg	1.36	0.680	1
Cl4-BZ#49	41.8		ug/kg	1.36	0.680	1
Cl4-BZ#52	109		ug/kg	1.36	0.680	1
Cl4-BZ#66	18.4		ug/kg	1.36	0.680	1
Cl5-BZ#87	4.69		ug/kg	1.36	0.680	1
Cl5-BZ#101	26.2		ug/kg	1.36	0.680	1
Cl5-BZ#105	42.6		ug/kg	1.36	0.680	1
Cl5-BZ#118	18.5		ug/kg	1.36	0.680	1
Cl6-BZ#128	2.82		ug/kg	1.36	0.680	1
Cl6-BZ#138	20.2		ug/kg	1.36	0.680	1
Cl6-BZ#153	19.6		ug/kg	1.36	0.680	1



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-01

Date Collected: 08/08/17 09:22

Client ID: NHH-X-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	5.69		ug/kg	1.36	0.680	1
Cl7-BZ#180	14.2		ug/kg	1.36	0.680	1
Cl7-BZ#183	3.30		ug/kg	1.36	0.680	1
Cl7-BZ#184	6.76		ug/kg	1.36	0.680	1
Cl7-BZ#187	10.4		ug/kg	1.36	0.680	1
Cl8-BZ#195	1.38		ug/kg	1.36	0.680	1
Cl9-BZ#206	3.11		ug/kg	1.36	0.680	1
Cl10-BZ#209	1.31	J	ug/kg	1.36	0.680	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	68		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	78		30-150
BZ 198	86		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1727562**Project Number:** 60543021**Report Date:** 08/29/17**SAMPLE RESULTS**

Lab ID: L1727562-01 D

Client ID: NHH-X-TOP

Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22

Date Received: 08/08/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Sediment

Extraction Date: 08/11/17 16:34

Analytical Method: 105,8270D-SIM/680(M)

Cleanup Method: EPA 3630

Analytical Date: 08/17/17 15:55

Cleanup Date: 08/14/17

Analyst: GP

Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab

Fluoranthene	3210		ug/kg	68.0	34.0	5
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	77		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	77		30-150
DBOB	95		30-150
BZ 198	76		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-02
 Client ID: NHH-X-REP-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 01:18
 Analyst: GP
 Percent Solids: 35%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	308		ug/kg	13.5	6.75	1
Acenaphthylene	275		ug/kg	13.5	6.75	1
Acenaphthene	327		ug/kg	13.5	6.75	1
Fluorene	335		ug/kg	13.5	6.75	1
Phenanthrene	1270		ug/kg	13.5	6.75	1
Anthracene	449		ug/kg	13.5	6.75	1
Fluoranthene	3140	E	ug/kg	13.5	6.75	1
Pyrene	2550		ug/kg	13.5	6.75	1
Benz(a)anthracene	1400		ug/kg	13.5	6.75	1
Chrysene	1240		ug/kg	13.5	6.75	1
Benzo(b)fluoranthene	1490		ug/kg	13.5	6.75	1
Benzo(k)fluoranthene	736		ug/kg	13.5	6.75	1
Benzo(a)pyrene	1030		ug/kg	13.5	6.75	1
Indeno(1,2,3-cd)Pyrene	717		ug/kg	13.5	6.75	1
Dibenz(a,h)anthracene	207		ug/kg	13.5	6.75	1
Benzo(ghi)perylene	773		ug/kg	13.5	6.75	1
Cl2-BZ#8	20.0		ug/kg	1.35	0.675	1
Cl3-BZ#18	137		ug/kg	1.35	0.675	1
Cl3-BZ#28	145		ug/kg	1.35	0.675	1
Cl4-BZ#44	90.0		ug/kg	1.35	0.675	1
Cl4-BZ#49	87.5		ug/kg	1.35	0.675	1
Cl4-BZ#52	201		ug/kg	1.35	0.675	1
Cl4-BZ#66	30.4		ug/kg	1.35	0.675	1
Cl5-BZ#87	5.81		ug/kg	1.35	0.675	1
Cl5-BZ#101	38.6		ug/kg	1.35	0.675	1
Cl5-BZ#105	45.6		ug/kg	1.35	0.675	1
Cl5-BZ#118	22.4		ug/kg	1.35	0.675	1
Cl6-BZ#128	3.92		ug/kg	1.35	0.675	1
Cl6-BZ#138	25.2		ug/kg	1.35	0.675	1
Cl6-BZ#153	22.6		ug/kg	1.35	0.675	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-02
Client ID: NHH-X-REP-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	6.86		ug/kg	1.35	0.675	1
Cl7-BZ#180	19.2		ug/kg	1.35	0.675	1
Cl7-BZ#183	3.84		ug/kg	1.35	0.675	1
Cl7-BZ#184	7.69		ug/kg	1.35	0.675	1
Cl7-BZ#187	11.4		ug/kg	1.35	0.675	1
Cl8-BZ#195	1.49		ug/kg	1.35	0.675	1
Cl9-BZ#206	5.18		ug/kg	1.35	0.675	1
Cl10-BZ#209	2.96		ug/kg	1.35	0.675	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		30-150
Pyrene-d10	73		30-150
Benzo(b)fluoranthene-d12	68		30-150
DBOB	72		30-150
BZ 198	79		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1727562**Project Number:** 60543021**Report Date:** 08/29/17**SAMPLE RESULTS**

Lab ID: L1727562-02 D

Client ID: NHH-X-REP-TOP

Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22

Date Received: 08/08/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Sediment

Extraction Date: 08/11/17 16:34

Analytical Method: 105,8270D-SIM/680(M)

Cleanup Method: EPA 3630

Analytical Date: 08/17/17 16:29

Cleanup Date: 08/14/17

Analyst: GP

Percent Solids: 35%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab

Fluoranthene	3360		ug/kg	67.5	33.8	5
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	64		30-150
Pyrene-d10	74		30-150
Benzo(b)fluoranthene-d12	70		30-150
DBOB	84		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-03
 Client ID: NHH-X-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 01:52
 Analyst: GP
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	5.91	2.95	1
Acenaphthylene	ND		ug/kg	5.91	2.95	1
Acenaphthene	ND		ug/kg	5.91	2.95	1
Fluorene	ND		ug/kg	5.91	2.95	1
Phenanthrene	ND		ug/kg	5.91	2.95	1
Anthracene	ND		ug/kg	5.91	2.95	1
Fluoranthene	ND		ug/kg	5.91	2.95	1
Pyrene	ND		ug/kg	5.91	2.95	1
Benz(a)anthracene	ND		ug/kg	5.91	2.95	1
Chrysene	ND		ug/kg	5.91	2.95	1
Benzo(b)fluoranthene	ND		ug/kg	5.91	2.95	1
Benzo(k)fluoranthene	ND		ug/kg	5.91	2.95	1
Benzo(a)pyrene	ND		ug/kg	5.91	2.95	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.91	2.95	1
Dibenz(a,h)anthracene	ND		ug/kg	5.91	2.95	1
Benzo(ghi)perylene	ND		ug/kg	5.91	2.95	1
Cl2-BZ#8	ND		ug/kg	0.591	0.295	1
Cl3-BZ#18	ND		ug/kg	0.591	0.295	1
Cl3-BZ#28	ND		ug/kg	0.591	0.295	1
Cl4-BZ#44	ND		ug/kg	0.591	0.295	1
Cl4-BZ#49	ND		ug/kg	0.591	0.295	1
Cl4-BZ#52	ND		ug/kg	0.591	0.295	1
Cl4-BZ#66	ND		ug/kg	0.591	0.295	1
Cl5-BZ#87	ND		ug/kg	0.591	0.295	1
Cl5-BZ#101	ND		ug/kg	0.591	0.295	1
Cl5-BZ#105	ND		ug/kg	0.591	0.295	1
Cl5-BZ#118	ND		ug/kg	0.591	0.295	1
Cl6-BZ#128	ND		ug/kg	0.591	0.295	1
Cl6-BZ#138	ND		ug/kg	0.591	0.295	1
Cl6-BZ#153	ND		ug/kg	0.591	0.295	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-03
Client ID: NHH-X-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.591	0.295	1
Cl7-BZ#180	ND		ug/kg	0.591	0.295	1
Cl7-BZ#183	ND		ug/kg	0.591	0.295	1
Cl7-BZ#184	ND		ug/kg	0.591	0.295	1
Cl7-BZ#187	ND		ug/kg	0.591	0.295	1
Cl8-BZ#195	ND		ug/kg	0.591	0.295	1
Cl9-BZ#206	ND		ug/kg	0.591	0.295	1
Cl10-BZ#209	ND		ug/kg	0.591	0.295	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	63		30-150
Pyrene-d10	70		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	70		30-150
BZ 198	75		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-04
 Client ID: NHH-Y-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 10:37
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 02:25
 Analyst: GP
 Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	69.5		ug/kg	13.3	6.67	1
Acenaphthylene	83.2		ug/kg	13.3	6.67	1
Acenaphthene	36.6		ug/kg	13.3	6.67	1
Fluorene	30.8		ug/kg	13.3	6.67	1
Phenanthrene	227		ug/kg	13.3	6.67	1
Anthracene	98.7		ug/kg	13.3	6.67	1
Fluoranthene	1190		ug/kg	13.3	6.67	1
Pyrene	948		ug/kg	13.3	6.67	1
Benz(a)anthracene	545		ug/kg	13.3	6.67	1
Chrysene	458		ug/kg	13.3	6.67	1
Benzo(b)fluoranthene	576		ug/kg	13.3	6.67	1
Benzo(k)fluoranthene	361		ug/kg	13.3	6.67	1
Benzo(a)pyrene	410		ug/kg	13.3	6.67	1
Indeno(1,2,3-cd)Pyrene	290		ug/kg	13.3	6.67	1
Dibenz(a,h)anthracene	85.9		ug/kg	13.3	6.67	1
Benzo(ghi)perylene	327		ug/kg	13.3	6.67	1
Cl2-BZ#8	ND		ug/kg	1.33	0.667	1
Cl3-BZ#18	1.38		ug/kg	1.33	0.667	1
Cl3-BZ#28	2.97		ug/kg	1.33	0.667	1
Cl4-BZ#44	2.22		ug/kg	1.33	0.667	1
Cl4-BZ#49	1.87		ug/kg	1.33	0.667	1
Cl4-BZ#52	3.54		ug/kg	1.33	0.667	1
Cl4-BZ#66	2.83		ug/kg	1.33	0.667	1
Cl5-BZ#87	0.935	J	ug/kg	1.33	0.667	1
Cl5-BZ#101	3.68		ug/kg	1.33	0.667	1
Cl5-BZ#105	ND		ug/kg	1.33	0.667	1
Cl5-BZ#118	4.81		ug/kg	1.33	0.667	1
Cl6-BZ#128	1.08	J	ug/kg	1.33	0.667	1
Cl6-BZ#138	4.16		ug/kg	1.33	0.667	1
Cl6-BZ#153	3.95		ug/kg	1.33	0.667	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-04
Client ID: NHH-Y-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 10:37
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.41		ug/kg	1.33	0.667	1
Cl7-BZ#180	2.69		ug/kg	1.33	0.667	1
Cl7-BZ#183	0.683	J	ug/kg	1.33	0.667	1
Cl7-BZ#184	ND		ug/kg	1.33	0.667	1
Cl7-BZ#187	1.81		ug/kg	1.33	0.667	1
Cl8-BZ#195	ND		ug/kg	1.33	0.667	1
Cl9-BZ#206	0.778	J	ug/kg	1.33	0.667	1
Cl10-BZ#209	ND		ug/kg	1.33	0.667	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	71		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	65		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-05
 Client ID: NHH-Z-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 02:58
 Analyst: GP
 Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	86.1		ug/kg	12.3	6.16	1
Acenaphthylene	81.6		ug/kg	12.3	6.16	1
Acenaphthene	27.2		ug/kg	12.3	6.16	1
Fluorene	28.8		ug/kg	12.3	6.16	1
Phenanthrene	208		ug/kg	12.3	6.16	1
Anthracene	92.7		ug/kg	12.3	6.16	1
Fluoranthene	935		ug/kg	12.3	6.16	1
Pyrene	774		ug/kg	12.3	6.16	1
Benz(a)anthracene	429		ug/kg	12.3	6.16	1
Chrysene	416		ug/kg	12.3	6.16	1
Benzo(b)fluoranthene	530		ug/kg	12.3	6.16	1
Benzo(k)fluoranthene	354		ug/kg	12.3	6.16	1
Benzo(a)pyrene	389		ug/kg	12.3	6.16	1
Indeno(1,2,3-cd)Pyrene	290		ug/kg	12.3	6.16	1
Dibenz(a,h)anthracene	67.0		ug/kg	12.3	6.16	1
Benzo(ghi)perylene	331		ug/kg	12.3	6.16	1
Cl2-BZ#8	0.650	J	ug/kg	1.23	0.616	1
Cl3-BZ#18	1.44		ug/kg	1.23	0.616	1
Cl3-BZ#28	1.31		ug/kg	1.23	0.616	1
Cl4-BZ#44	2.13		ug/kg	1.23	0.616	1
Cl4-BZ#49	1.73		ug/kg	1.23	0.616	1
Cl4-BZ#52	3.03		ug/kg	1.23	0.616	1
Cl4-BZ#66	2.71		ug/kg	1.23	0.616	1
Cl5-BZ#87	0.790	J	ug/kg	1.23	0.616	1
Cl5-BZ#101	3.69		ug/kg	1.23	0.616	1
Cl5-BZ#105	0.860	J	ug/kg	1.23	0.616	1
Cl5-BZ#118	3.41		ug/kg	1.23	0.616	1
Cl6-BZ#128	0.971	J	ug/kg	1.23	0.616	1
Cl6-BZ#138	4.72		ug/kg	1.23	0.616	1
Cl6-BZ#153	4.24		ug/kg	1.23	0.616	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-05
Client ID: NHH-Z-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.987	J	ug/kg	1.23	0.616	1
Cl7-BZ#180	2.12		ug/kg	1.23	0.616	1
Cl7-BZ#183	0.685	J	ug/kg	1.23	0.616	1
Cl7-BZ#184	ND		ug/kg	1.23	0.616	1
Cl7-BZ#187	1.62		ug/kg	1.23	0.616	1
Cl8-BZ#195	ND		ug/kg	1.23	0.616	1
Cl9-BZ#206	0.691	J	ug/kg	1.23	0.616	1
Cl10-BZ#209	0.633	J	ug/kg	1.23	0.616	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	63		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	66		30-150
DBOB	67		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-06
 Client ID: NHH-Z-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 03:31
 Analyst: GP
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	740		ug/kg	10.3	5.13	1
Acenaphthylene	199		ug/kg	10.3	5.13	1
Acenaphthene	142		ug/kg	10.3	5.13	1
Fluorene	271		ug/kg	10.3	5.13	1
Phenanthrene	1230		ug/kg	10.3	5.13	1
Anthracene	246		ug/kg	10.3	5.13	1
Fluoranthene	1810		ug/kg	10.3	5.13	1
Pyrene	1560		ug/kg	10.3	5.13	1
Benz(a)anthracene	833		ug/kg	10.3	5.13	1
Chrysene	791		ug/kg	10.3	5.13	1
Benzo(b)fluoranthene	1050		ug/kg	10.3	5.13	1
Benzo(k)fluoranthene	578		ug/kg	10.3	5.13	1
Benzo(a)pyrene	734		ug/kg	10.3	5.13	1
Indeno(1,2,3-cd)Pyrene	509		ug/kg	10.3	5.13	1
Dibenz(a,h)anthracene	158		ug/kg	10.3	5.13	1
Benzo(ghi)perylene	609		ug/kg	10.3	5.13	1
Cl2-BZ#8	3.91		ug/kg	1.03	0.513	1
Cl3-BZ#18	17.2		ug/kg	1.03	0.513	1
Cl3-BZ#28	32.5		ug/kg	1.03	0.513	1
Cl4-BZ#44	33.6		ug/kg	1.03	0.513	1
Cl4-BZ#49	21.0		ug/kg	1.03	0.513	1
Cl4-BZ#52	71.9		ug/kg	1.03	0.513	1
Cl4-BZ#66	21.4		ug/kg	1.03	0.513	1
Cl5-BZ#87	7.81		ug/kg	1.03	0.513	1
Cl5-BZ#101	27.3		ug/kg	1.03	0.513	1
Cl5-BZ#105	16.7		ug/kg	1.03	0.513	1
Cl5-BZ#118	24.2		ug/kg	1.03	0.513	1
Cl6-BZ#128	4.68		ug/kg	1.03	0.513	1
Cl6-BZ#138	27.4		ug/kg	1.03	0.513	1
Cl6-BZ#153	23.7		ug/kg	1.03	0.513	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-06
Client ID: NHH-Z-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	8.49		ug/kg	1.03	0.513	1
CI7-BZ#180	20.9		ug/kg	1.03	0.513	1
CI7-BZ#183	4.61		ug/kg	1.03	0.513	1
CI7-BZ#184	2.40		ug/kg	1.03	0.513	1
CI7-BZ#187	13.1		ug/kg	1.03	0.513	1
CI8-BZ#195	1.79		ug/kg	1.03	0.513	1
CI9-BZ#206	3.37		ug/kg	1.03	0.513	1
CI10-BZ#209	1.53		ug/kg	1.03	0.513	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	64		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	68		30-150
BZ 198	75		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-07
 Client ID: NHH-N-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 13:05
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 04:04
 Analyst: GP
 Percent Solids: 64%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	153		ug/kg	7.66	3.83	1
Acenaphthylene	44.7		ug/kg	7.66	3.83	1
Acenaphthene	13.2		ug/kg	7.66	3.83	1
Fluorene	17.3		ug/kg	7.66	3.83	1
Phenanthrene	122		ug/kg	7.66	3.83	1
Anthracene	37.0		ug/kg	7.66	3.83	1
Fluoranthene	292		ug/kg	7.66	3.83	1
Pyrene	258		ug/kg	7.66	3.83	1
Benz(a)anthracene	141		ug/kg	7.66	3.83	1
Chrysene	143		ug/kg	7.66	3.83	1
Benzo(b)fluoranthene	168		ug/kg	7.66	3.83	1
Benzo(k)fluoranthene	125		ug/kg	7.66	3.83	1
Benzo(a)pyrene	142		ug/kg	7.66	3.83	1
Indeno(1,2,3-cd)Pyrene	104		ug/kg	7.66	3.83	1
Dibenz(a,h)anthracene	31.8		ug/kg	7.66	3.83	1
Benzo(ghi)perylene	119		ug/kg	7.66	3.83	1
Cl2-BZ#8	0.555	J	ug/kg	0.766	0.383	1
Cl3-BZ#18	1.49		ug/kg	0.766	0.383	1
Cl3-BZ#28	1.23		ug/kg	0.766	0.383	1
Cl4-BZ#44	2.59		ug/kg	0.766	0.383	1
Cl4-BZ#49	2.92		ug/kg	0.766	0.383	1
Cl4-BZ#52	5.17		ug/kg	0.766	0.383	1
Cl4-BZ#66	2.76		ug/kg	0.766	0.383	1
Cl5-BZ#87	0.720	J	ug/kg	0.766	0.383	1
Cl5-BZ#101	4.46		ug/kg	0.766	0.383	1
Cl5-BZ#105	ND		ug/kg	0.766	0.383	1
Cl5-BZ#118	4.18		ug/kg	0.766	0.383	1
Cl6-BZ#128	0.766		ug/kg	0.766	0.383	1
Cl6-BZ#138	4.21		ug/kg	0.766	0.383	1
Cl6-BZ#153	4.56		ug/kg	0.766	0.383	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-07
Client ID: NHH-N-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 13:05
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.950		ug/kg	0.766	0.383	1
Cl7-BZ#180	2.52		ug/kg	0.766	0.383	1
Cl7-BZ#183	0.737	J	ug/kg	0.766	0.383	1
Cl7-BZ#184	ND		ug/kg	0.766	0.383	1
Cl7-BZ#187	1.72		ug/kg	0.766	0.383	1
Cl8-BZ#195	ND		ug/kg	0.766	0.383	1
Cl9-BZ#206	0.649	J	ug/kg	0.766	0.383	1
Cl10-BZ#209	0.852		ug/kg	0.766	0.383	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	64		30-150
Benzo(b)fluoranthene-d12	61		30-150
DBOB	70		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-08
 Client ID: NHH-O-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 14:45
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 06:15
 Analyst: GP
 Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	228		ug/kg	11.7	5.84	1
Acenaphthylene	58.1		ug/kg	11.7	5.84	1
Acenaphthene	26.8		ug/kg	11.7	5.84	1
Fluorene	24.7		ug/kg	11.7	5.84	1
Phenanthrene	172		ug/kg	11.7	5.84	1
Anthracene	58.0		ug/kg	11.7	5.84	1
Fluoranthene	479		ug/kg	11.7	5.84	1
Pyrene	424		ug/kg	11.7	5.84	1
Benz(a)anthracene	234		ug/kg	11.7	5.84	1
Chrysene	234		ug/kg	11.7	5.84	1
Benzo(b)fluoranthene	310		ug/kg	11.7	5.84	1
Benzo(k)fluoranthene	210		ug/kg	11.7	5.84	1
Benzo(a)pyrene	247		ug/kg	11.7	5.84	1
Indeno(1,2,3-cd)Pyrene	187		ug/kg	11.7	5.84	1
Dibenz(a,h)anthracene	53.3		ug/kg	11.7	5.84	1
Benzo(ghi)perylene	214		ug/kg	11.7	5.84	1
Cl2-BZ#8	ND		ug/kg	1.17	0.584	1
Cl3-BZ#18	0.948	J	ug/kg	1.17	0.584	1
Cl3-BZ#28	0.905	J	ug/kg	1.17	0.584	1
Cl4-BZ#44	1.52		ug/kg	1.17	0.584	1
Cl4-BZ#49	1.62		ug/kg	1.17	0.584	1
Cl4-BZ#52	1.87		ug/kg	1.17	0.584	1
Cl4-BZ#66	2.12		ug/kg	1.17	0.584	1
Cl5-BZ#87	ND		ug/kg	1.17	0.584	1
Cl5-BZ#101	3.75		ug/kg	1.17	0.584	1
Cl5-BZ#105	ND		ug/kg	1.17	0.584	1
Cl5-BZ#118	3.41		ug/kg	1.17	0.584	1
Cl6-BZ#128	0.594	J	ug/kg	1.17	0.584	1
Cl6-BZ#138	4.03		ug/kg	1.17	0.584	1
Cl6-BZ#153	3.70		ug/kg	1.17	0.584	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-08
Client ID: NHH-O-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 14:45
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	1.02	J	ug/kg	1.17	0.584	1
CI7-BZ#180	2.00		ug/kg	1.17	0.584	1
CI7-BZ#183	0.649	J	ug/kg	1.17	0.584	1
CI7-BZ#184	ND		ug/kg	1.17	0.584	1
CI7-BZ#187	1.63		ug/kg	1.17	0.584	1
CI8-BZ#195	ND		ug/kg	1.17	0.584	1
CI9-BZ#206	0.766	J	ug/kg	1.17	0.584	1
CI10-BZ#209	ND		ug/kg	1.17	0.584	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	70		30-150
DBOB	75		30-150
BZ 198	75		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-09
 Client ID: NHH-M
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 16:10
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 06:47
 Analyst: GP
 Percent Solids: 38%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	76.0		ug/kg	12.8	6.43	1
Acenaphthylene	64.7		ug/kg	12.8	6.43	1
Acenaphthene	22.7		ug/kg	12.8	6.43	1
Fluorene	23.1		ug/kg	12.8	6.43	1
Phenanthrene	177		ug/kg	12.8	6.43	1
Anthracene	68.0		ug/kg	12.8	6.43	1
Fluoranthene	550		ug/kg	12.8	6.43	1
Pyrene	483		ug/kg	12.8	6.43	1
Benz(a)anthracene	276		ug/kg	12.8	6.43	1
Chrysene	283		ug/kg	12.8	6.43	1
Benzo(b)fluoranthene	379		ug/kg	12.8	6.43	1
Benzo(k)fluoranthene	246		ug/kg	12.8	6.43	1
Benzo(a)pyrene	290		ug/kg	12.8	6.43	1
Indeno(1,2,3-cd)Pyrene	226		ug/kg	12.8	6.43	1
Dibenz(a,h)anthracene	53.7		ug/kg	12.8	6.43	1
Benzo(ghi)perylene	254		ug/kg	12.8	6.43	1
Cl2-BZ#8	0.838	J	ug/kg	1.28	0.643	1
Cl3-BZ#18	1.13	J	ug/kg	1.28	0.643	1
Cl3-BZ#28	0.865	J	ug/kg	1.28	0.643	1
Cl4-BZ#44	1.95		ug/kg	1.28	0.643	1
Cl4-BZ#49	1.57		ug/kg	1.28	0.643	1
Cl4-BZ#52	2.55		ug/kg	1.28	0.643	1
Cl4-BZ#66	1.86		ug/kg	1.28	0.643	1
Cl5-BZ#87	ND		ug/kg	1.28	0.643	1
Cl5-BZ#101	3.05		ug/kg	1.28	0.643	1
Cl5-BZ#105	ND		ug/kg	1.28	0.643	1
Cl5-BZ#118	2.68		ug/kg	1.28	0.643	1
Cl6-BZ#128	0.658	J	ug/kg	1.28	0.643	1
Cl6-BZ#138	3.46		ug/kg	1.28	0.643	1
Cl6-BZ#153	3.27		ug/kg	1.28	0.643	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-09
Client ID: NHH-M
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 16:10
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.755	J	ug/kg	1.28	0.643	1
Cl7-BZ#180	1.72		ug/kg	1.28	0.643	1
Cl7-BZ#183	ND		ug/kg	1.28	0.643	1
Cl7-BZ#184	ND		ug/kg	1.28	0.643	1
Cl7-BZ#187	1.43		ug/kg	1.28	0.643	1
Cl8-BZ#195	ND		ug/kg	1.28	0.643	1
Cl9-BZ#206	0.670	J	ug/kg	1.28	0.643	1
Cl10-BZ#209	0.753	J	ug/kg	1.28	0.643	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	63		30-150
Pyrene-d10	71		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	71		30-150
BZ 198	72		30-150

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-10
 Client ID: NHH-T-TOP
 Sample Location: NEW HAVEN, CT

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 07:20
 Analyst: GP
 Percent Solids: 34%

Date Collected: 08/08/17 17:34
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	71.4		ug/kg	13.4	6.71	1
Acenaphthylene	79.9		ug/kg	13.4	6.71	1
Acenaphthene	27.2		ug/kg	13.4	6.71	1
Fluorene	18.6		ug/kg	13.4	6.71	1
Phenanthrene	213		ug/kg	13.4	6.71	1
Anthracene	82.7		ug/kg	13.4	6.71	1
Fluoranthene	814		ug/kg	13.4	6.71	1
Pyrene	694		ug/kg	13.4	6.71	1
Benz(a)anthracene	373		ug/kg	13.4	6.71	1
Chrysene	379		ug/kg	13.4	6.71	1
Benzo(b)fluoranthene	527		ug/kg	13.4	6.71	1
Benzo(k)fluoranthene	362		ug/kg	13.4	6.71	1
Benzo(a)pyrene	392		ug/kg	13.4	6.71	1
Indeno(1,2,3-cd)Pyrene	301		ug/kg	13.4	6.71	1
Dibenz(a,h)anthracene	69.9		ug/kg	13.4	6.71	1
Benzo(ghi)perylene	350		ug/kg	13.4	6.71	1
Cl2-BZ#8	0.719	J	ug/kg	1.34	0.671	1
Cl3-BZ#18	0.816	J	ug/kg	1.34	0.671	1
Cl3-BZ#28	0.884	J	ug/kg	1.34	0.671	1
Cl4-BZ#44	2.05		ug/kg	1.34	0.671	1
Cl4-BZ#49	1.38		ug/kg	1.34	0.671	1
Cl4-BZ#52	1.86		ug/kg	1.34	0.671	1
Cl4-BZ#66	2.08		ug/kg	1.34	0.671	1
Cl5-BZ#87	1.09	J	ug/kg	1.34	0.671	1
Cl5-BZ#101	3.94		ug/kg	1.34	0.671	1
Cl5-BZ#105	2.89		ug/kg	1.34	0.671	1
Cl5-BZ#118	3.41		ug/kg	1.34	0.671	1
Cl6-BZ#128	0.886	J	ug/kg	1.34	0.671	1
Cl6-BZ#138	4.12		ug/kg	1.34	0.671	1
Cl6-BZ#153	3.73		ug/kg	1.34	0.671	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-10
Client ID: NHH-T-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.08	J	ug/kg	1.34	0.671	1
Cl7-BZ#180	2.12		ug/kg	1.34	0.671	1
Cl7-BZ#183	0.735	J	ug/kg	1.34	0.671	1
Cl7-BZ#184	ND		ug/kg	1.34	0.671	1
Cl7-BZ#187	2.30		ug/kg	1.34	0.671	1
Cl8-BZ#195	ND		ug/kg	1.34	0.671	1
Cl9-BZ#206	0.866	J	ug/kg	1.34	0.671	1
Cl10-BZ#209	0.695	J	ug/kg	1.34	0.671	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	68		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-11
 Client ID: NHH-T-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 17:34
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 07:53
 Analyst: GP
 Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	175		ug/kg	11.2	5.58	1
Acenaphthylene	151		ug/kg	11.2	5.58	1
Acenaphthene	53.1		ug/kg	11.2	5.58	1
Fluorene	75.4		ug/kg	11.2	5.58	1
Phenanthrene	498		ug/kg	11.2	5.58	1
Anthracene	147		ug/kg	11.2	5.58	1
Fluoranthene	1300		ug/kg	11.2	5.58	1
Pyrene	1090		ug/kg	11.2	5.58	1
Benz(a)anthracene	602		ug/kg	11.2	5.58	1
Chrysene	587		ug/kg	11.2	5.58	1
Benzo(b)fluoranthene	680		ug/kg	11.2	5.58	1
Benzo(k)fluoranthene	493		ug/kg	11.2	5.58	1
Benzo(a)pyrene	547		ug/kg	11.2	5.58	1
Indeno(1,2,3-cd)Pyrene	395		ug/kg	11.2	5.58	1
Dibenz(a,h)anthracene	113		ug/kg	11.2	5.58	1
Benzo(ghi)perylene	445		ug/kg	11.2	5.58	1
Cl2-BZ#8	4.47		ug/kg	1.12	0.558	1
Cl3-BZ#18	13.4		ug/kg	1.12	0.558	1
Cl3-BZ#28	22.2		ug/kg	1.12	0.558	1
Cl4-BZ#44	15.0		ug/kg	1.12	0.558	1
Cl4-BZ#49	13.8		ug/kg	1.12	0.558	1
Cl4-BZ#52	16.8		ug/kg	1.12	0.558	1
Cl4-BZ#66	9.82		ug/kg	1.12	0.558	1
Cl5-BZ#87	2.87		ug/kg	1.12	0.558	1
Cl5-BZ#101	11.6		ug/kg	1.12	0.558	1
Cl5-BZ#105	16.6		ug/kg	1.12	0.558	1
Cl5-BZ#118	11.3		ug/kg	1.12	0.558	1
Cl6-BZ#128	2.47		ug/kg	1.12	0.558	1
Cl6-BZ#138	13.5		ug/kg	1.12	0.558	1
Cl6-BZ#153	12.2		ug/kg	1.12	0.558	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-11
Client ID: NHH-T-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	4.17		ug/kg	1.12	0.558	1
CI7-BZ#180	8.15		ug/kg	1.12	0.558	1
CI7-BZ#183	2.23		ug/kg	1.12	0.558	1
CI7-BZ#184	2.93		ug/kg	1.12	0.558	1
CI7-BZ#187	7.02		ug/kg	1.12	0.558	1
CI8-BZ#195	1.16		ug/kg	1.12	0.558	1
CI9-BZ#206	1.81		ug/kg	1.12	0.558	1
CI10-BZ#209	1.01	J	ug/kg	1.12	0.558	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	56		30-150
Pyrene-d10	58		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	64		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 08/16/17 18:53

Extraction Date: 08/11/17 16:34

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-11 Batch: WG1031095-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 08/16/17 18:53

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 08/11/17 16:34

Cleanup Method: EPA 3630

Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-11 Batch: WG1031095-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	62		30-150
BZ 198	63		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 Batch: WG1031095-2 WG1031095-3								
Naphthalene	64		71		50-120	10		30
Acenaphthylene	66		65		50-120	2		30
Acenaphthene	67		66		50-120	2		30
Fluorene	68		65		50-120	5		30
Phenanthrene	66		69		50-120	4		30
Anthracene	68		70		50-120	3		30
Fluoranthene	71		74		50-120	4		30
Pyrene	71		73		50-120	3		30
Benz(a)anthracene	74		79		50-120	7		30
Chrysene	74		75		50-120	1		30
Benzo(b)fluoranthene	79		86		50-120	8		30
Benzo(k)fluoranthene	77		74		50-120	4		30
Benzo(a)pyrene	75		77		50-120	3		30
Indeno(1,2,3-cd)Pyrene	70		75		50-120	7		30
Dibenz(a,h)anthracene	73		75		50-120	3		30
Benzo(ghi)perylene	76		79		50-120	4		30
Cl2-BZ#8	72		73		50-120	1		30
Cl3-BZ#18	69		70		50-120	1		30
Cl3-BZ#28	70		72		50-120	3		30
Cl4-BZ#44	73		76		50-120	4		30
Cl4-BZ#49	72		75		50-120	4		30
Cl4-BZ#52	71		72		50-120	1		30
Cl4-BZ#66	73		75		50-120	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 Batch: WG1031095-2 WG1031095-3								
Cl5-BZ#87	72		75		50-120	4		30
Cl5-BZ#101	69		72		50-120	4		30
Cl5-BZ#105	74		75		50-120	1		30
Cl5-BZ#118	74		76		50-120	3		30
Cl6-BZ#128	72		75		50-120	4		30
Cl6-BZ#138	73		75		50-120	3		30
Cl6-BZ#153	73		77		50-120	5		30
Cl7-BZ#170	69		72		50-120	4		30
Cl7-BZ#180	70		72		50-120	3		30
Cl7-BZ#183	69		71		50-120	3		30
Cl7-BZ#184	69		72		50-120	4		30
Cl7-BZ#187	68		72		50-120	6		30
Cl8-BZ#195	69		73		50-120	6		30
Cl9-BZ#206	68		72		50-120	6		30
Cl10-BZ#209	73		75		50-120	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	63		65		30-150
Pyrene-d10	76		75		30-150
Benzo(b)fluoranthene-d12	80		79		30-150
DBOB	67		68		30-150
BZ 198	70		71		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NHH-N-TOP Associated sample(s): 01-11 QC Batch ID: WG1031095-6 WG1031095-7 QC Sample: L1727562-07 Client												
Naphthalene	153	380	461	81		424	71		50-120	8		30
Acenaphthylene	44.7	380	302	68		281	62		50-120	7		30
Acenaphthene	13.2	380	274	69		256	64		50-120	7		30
Fluorene	17.3	380	281	69		264	65		50-120	6		30
Phenanthrene	122	380	432	82		395	72		50-120	9		30
Anthracene	37.0	380	273	62		263	59		50-120	4		30
Fluoranthene	292	380	606	83		558	70		50-120	8		30
Pyrene	258	380	564	81		525	70		50-120	7		30
Benz(a)anthracene	141	380	478	89		438	78		50-120	9		30
Chrysene	143	380	403	68		373	60		50-120	8		30
Benzo(b)fluoranthene	168	380	537	97		488	84		50-120	10		30
Benzo(k)fluoranthene	125	380	344	58		322	52		50-120	7		30
Benzo(a)pyrene	142	380	416	72		383	63		50-120	8		30
Indeno(1,2,3-cd)Pyrene	104	380	393	76		346	64		50-120	13		30
Dibenz(a,h)anthracene	31.8	380	305	72		284	66		50-120	7		30
Benzo(ghi)perylene	119	380	410	77		377	68		50-120	8		30
Cl2-BZ#8	0.555J	76	55.9	74		56.3	74		50-120	1		30
Cl3-BZ#18	1.49	76	56.0	72		57.0	73		50-120	2		30
Cl3-BZ#28	1.23	76	57.1	74		57.2	73		50-120	0		30
Cl4-BZ#44	2.59	76	59.1	74		59.2	74		50-120	0		30
Cl4-BZ#49	2.92	76	47.5	59		49.0	60		50-120	3		30
Cl4-BZ#52	5.17	76	74.9	92		74.4	91		50-120	1		30
Cl4-BZ#66	2.76	76	64.7	82		65.5	82		50-120	1		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031095-6 WG1031095-7 QC Sample: L1727562-07 Client ID: NHH-N-TOP												
CI5-BZ#87	0.720J	76	64.2	85		65.6	86		50-120	2		30
CI5-BZ#101	4.46	76	64.7	79		64.5	79		50-120	0		30
CI5-BZ#105	ND	76	50.4	66		53.1	70		50-120	5		30
CI5-BZ#118	4.18	76	63.9	79		64.7	79		50-120	1		30
CI6-BZ#128	0.766	76	56.4	74		57.2	75		50-120	1		30
CI6-BZ#138	4.21	76	63.7	78		63.0	77		50-120	1		30
CI6-BZ#153	4.56	76	63.6	78		64.2	78		50-120	1		30
CI7-BZ#170	0.950	76	56.4	73		56.6	73		50-120	0		30
CI7-BZ#180	2.52	76	57.5	72		57.7	72		50-120	0		30
CI7-BZ#183	0.737J	76	45.3	60		46.2	61		50-120	2		30
CI7-BZ#184	ND	76	53.5	70		53.6	70		50-120	0		30
CI7-BZ#187	1.72	76	64.4	83		63.9	82		50-120	1		30
CI8-BZ#195	ND	76	55.6	73		56.1	74		50-120	1		30
CI9-BZ#206	0.649J	76	55.0	72		55.7	73		50-120	1		30
CI10-BZ#209	0.852	76	56.1	73		56.6	73		50-120	1		30

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		60		30-150
BZ 198	75		76		30-150
Benzo(b)fluoranthene-d12	70		63		30-150
DBOB	74		75		30-150
Pyrene-d10	73		66		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031095-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Naphthalene	153	163	ug/kg	6		30
Acenaphthylene	44.7	43.6	ug/kg	2		30
Acenaphthene	13.2	12.8	ug/kg	3		30
Fluorene	17.3	19.0	ug/kg	9		30
Phenanthrene	122	113	ug/kg	8		30
Anthracene	37.0	33.4	ug/kg	10		30
Fluoranthene	292	279	ug/kg	5		30
Pyrene	258	253	ug/kg	2		30
Benz(a)anthracene	141	139	ug/kg	1		30
Chrysene	143	138	ug/kg	4		30
Benzo(b)fluoranthene	168	168	ug/kg	0		30
Benzo(k)fluoranthene	125	121	ug/kg	3		30
Benzo(a)pyrene	142	136	ug/kg	4		30
Indeno(1,2,3-cd)Pyrene	104	104	ug/kg	0		30
Dibenz(a,h)anthracene	31.8	31.9	ug/kg	0		30
Benzo(ghi)perylene	119	120	ug/kg	1		30
Cl2-BZ#8	0.555J	0.627J	ug/kg	NC		30
Cl3-BZ#18	1.49	1.78	ug/kg	18		30
Cl3-BZ#28	1.23	1.06	ug/kg	15		30
Cl4-BZ#44	2.59	3.52	ug/kg	30		30
Cl4-BZ#49	2.92	3.28	ug/kg	12		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031095-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Cl4-BZ#52	5.17	3.30	ug/kg	44	Q	30
Cl4-BZ#66	2.76	2.72	ug/kg	1		30
Cl5-BZ#87	0.720J	ND	ug/kg	NC		30
Cl5-BZ#101	4.46	4.37	ug/kg	2		30
Cl5-BZ#105	ND	ND	ug/kg	NC		30
Cl5-BZ#118	4.18	3.99	ug/kg	5		30
Cl6-BZ#128	0.766	0.739J	ug/kg	NC		30
Cl6-BZ#138	4.21	3.73	ug/kg	12		30
Cl6-BZ#153	4.56	4.20	ug/kg	8		30
Cl7-BZ#170	0.950	1.34	ug/kg	34	Q	30
Cl7-BZ#180	2.52	2.34	ug/kg	7		30
Cl7-BZ#183	0.737J	0.761J	ug/kg	NC		30
Cl7-BZ#184	ND	ND	ug/kg	NC		30
Cl7-BZ#187	1.72	1.70	ug/kg	1		30
Cl8-BZ#195	ND	ND	ug/kg	NC		30
Cl9-BZ#206	0.649J	0.867	ug/kg	NC		30
Cl10-BZ#209	0.852	0.561J	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		58		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031095-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	64		63		30-150
Benzo(b)fluoranthene-d12	61		60		30-150
DBOB	70		66		30-150
BZ 198	67		70		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1031095-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	60		40-140
Fluoranthene	60		40-140
Pyrene	54		40-140
Benz(a)anthracene	65		40-140
Chrysene	61		40-140
Benzo(b)fluoranthene	70		40-140
Benzo(k)fluoranthene	76		40-140
Benzo(a)pyrene	42		40-140
Indeno(1,2,3-cd)Pyrene	54		40-140
Dibenz(a,h)anthracene	115		40-140
Benzo(ghi)perylene	52		40-140
Cl2-BZ#8	61		40-140
Cl3-BZ#18	100		40-140
Cl3-BZ#28	44		40-140
Cl4-BZ#44	98		40-140
Cl4-BZ#49	62		40-140
Cl4-BZ#52	55		40-140
Cl4-BZ#66	50		40-140
Cl5-BZ#87	51		40-140
Cl5-BZ#101	62		40-140
Cl5-BZ#105	66		40-140
Cl5-BZ#118	68		40-140
Cl6-BZ#128	100		40-140
Cl6-BZ#138	77		40-140
Cl6-BZ#153	52		40-140
Cl7-BZ#170	58		40-140
Cl7-BZ#180	58		40-140
Cl7-BZ#183	56		40-140
Cl7-BZ#187	55		40-140
Cl9-BZ#206	67		40-140
Cl10-BZ#209	86		40-140
2-Methylnaphthalene-d10 (Surrogate)	68		30-150
Pyrene-d10 (Surrogate)	76		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	71		30-150
DBOB (Surrogate)	74		30-150
BZ 198 (Surrogate)	66		30-150



PESTICIDES

Project Name: USACE/NHH FNP**Lab Number:** L1727562**Project Number:** 60543021**Report Date:** 08/29/17**SAMPLE RESULTS**

Lab ID: L1727562-01 D
 Client ID: NHH-X-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/28/17 19:42
 Analyst: DP
 Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.72	2.72	2	A
gamma-BHC	3.66		ug/kg	1.36	1.36	2	A
Heptachlor	ND		ug/kg	1.36	1.36	2	A
Aldrin	ND		ug/kg	1.36	1.36	2	A
Heptachlor epoxide	ND		ug/kg	2.72	2.72	2	B
Oxychlordane	ND		ug/kg	2.72	2.72	2	B
trans-Chlordane	132	P	ug/kg	1.36	1.36	2	A
Endosulfan I	ND		ug/kg	1.36	1.36	2	A
cis-Chlordane	3.92		ug/kg	1.36	1.36	2	A
trans-Nonachlor	10.2	P	ug/kg	1.36	1.36	2	A
4,4'-DDE	7.83		ug/kg	1.36	1.36	2	A
Dieldrin	3.88	IP	ug/kg	1.36	1.36	2	A
Endrin	ND		ug/kg	1.36	1.36	2	A
Endosulfan II	23.3	I	ug/kg	1.36	1.36	2	B
4,4'-DDD	3.22		ug/kg	1.36	1.36	2	B
cis-Nonachlor	ND		ug/kg	1.36	1.36	2	A
4,4'-DDT	17.9		ug/kg	1.36	1.36	2	A
Methoxychlor	ND		ug/kg	13.6	13.6	2	A
Toxaphene	ND		ug/kg	68.3	68.3	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	86		30-150	A
DBOB	44		30-150	B
BZ 198	75		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-02 D
 Client ID: NHH-X-REP-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/28/17 20:16
 Analyst: DP
 Percent Solids: 35%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.70	2.70	2	A
gamma-BHC	5.25		ug/kg	1.35	1.35	2	A
Heptachlor	ND		ug/kg	1.35	1.35	2	A
Aldrin	ND		ug/kg	1.35	1.35	2	A
Heptachlor epoxide	ND		ug/kg	2.70	2.70	2	B
Oxychlordane	ND		ug/kg	2.70	2.70	2	B
trans-Chlordane	146	P	ug/kg	1.35	1.35	2	A
Endosulfan I	ND		ug/kg	1.35	1.35	2	A
cis-Chlordane	6.99		ug/kg	1.35	1.35	2	A
trans-Nonachlor	12.4	P	ug/kg	1.35	1.35	2	A
4,4'-DDE	11.1		ug/kg	1.35	1.35	2	A
Dieldrin	5.52	IP	ug/kg	1.35	1.35	2	A
Endrin	ND		ug/kg	1.35	1.35	2	A
Endosulfan II	30.5	I	ug/kg	1.35	1.35	2	B
4,4'-DDD	5.56		ug/kg	1.35	1.35	2	A
cis-Nonachlor	ND		ug/kg	1.35	1.35	2	A
4,4'-DDT	20.3		ug/kg	1.35	1.35	2	A
Methoxychlor	ND		ug/kg	13.5	13.5	2	A
Toxaphene	ND		ug/kg	67.8	67.8	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	84		30-150	A
DBOB	45		30-150	B
BZ 198	75		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-03
Client ID: NHH-X-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/28/17 20:50
Analyst: DP
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.591	0.591	1	A
gamma-BHC	ND		ug/kg	0.295	0.295	1	A
Heptachlor	ND		ug/kg	0.295	0.295	1	A
Aldrin	ND		ug/kg	0.295	0.295	1	A
Heptachlor epoxide	ND		ug/kg	0.591	0.591	1	B
Oxychlordane	ND		ug/kg	0.591	0.591	1	B
trans-Chlordane	ND		ug/kg	0.295	0.295	1	A
Endosulfan I	ND		ug/kg	0.295	0.295	1	A
cis-Chlordane	ND		ug/kg	0.295	0.295	1	A
trans-Nonachlor	ND		ug/kg	0.295	0.295	1	A
4,4'-DDE	ND		ug/kg	0.295	0.295	1	A
Dieldrin	ND		ug/kg	0.295	0.295	1	A
Endrin	ND		ug/kg	0.295	0.295	1	A
Endosulfan II	ND		ug/kg	0.295	0.295	1	A
4,4'-DDD	ND		ug/kg	0.295	0.295	1	A
cis-Nonachlor	ND		ug/kg	0.295	0.295	1	A
4,4'-DDT	ND		ug/kg	0.295	0.295	1	A
Methoxychlor	ND		ug/kg	2.95	2.95	1	A
Toxaphene	ND		ug/kg	14.8	14.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	39		30-150	A
BZ 198	51		30-150	A
DBOB	37		30-150	B
BZ 198	51		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-04 D
 Client ID: NHH-Y-TOP
 Sample Location: NEW HAVEN, CT
 Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/28/17 21:24
 Analyst: DP
 Percent Solids: 37%

Date Collected: 08/08/17 10:37
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.67	2.67	2	A
gamma-BHC	ND		ug/kg	1.33	1.33	2	A
Heptachlor	ND		ug/kg	1.33	1.33	2	A
Aldrin	ND		ug/kg	1.33	1.33	2	A
Heptachlor epoxide	ND		ug/kg	2.67	2.67	2	B
Oxychlordane	ND		ug/kg	2.67	2.67	2	B
trans-Chlordane	ND		ug/kg	1.33	1.33	2	A
Endosulfan I	ND		ug/kg	1.33	1.33	2	A
cis-Chlordane	ND		ug/kg	1.33	1.33	2	A
trans-Nonachlor	1.76		ug/kg	1.33	1.33	2	A
4,4'-DDE	3.32		ug/kg	1.33	1.33	2	B
Dieldrin	1.45	IP	ug/kg	1.33	1.33	2	A
Endrin	ND		ug/kg	1.33	1.33	2	A
Endosulfan II	2.08	IP	ug/kg	1.33	1.33	2	B
4,4'-DDD	1.51		ug/kg	1.33	1.33	2	B
cis-Nonachlor	ND		ug/kg	1.33	1.33	2	A
4,4'-DDT	2.54	I	ug/kg	1.33	1.33	2	A
Methoxychlor	ND		ug/kg	13.3	13.3	2	A
Toxaphene	ND		ug/kg	67.0	67.0	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	59		30-150	A
BZ 198	80		30-150	A
DBOB	52		30-150	B
BZ 198	84		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1727562**Project Number:** 60543021**Report Date:** 08/29/17**SAMPLE RESULTS**

Lab ID: L1727562-05 D
 Client ID: NHH-Z-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/28/17 21:59
 Analyst: DP
 Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.46	2.46	2	A
gamma-BHC	ND		ug/kg	1.23	1.23	2	A
Heptachlor	ND		ug/kg	1.23	1.23	2	A
Aldrin	ND		ug/kg	1.23	1.23	2	A
Heptachlor epoxide	ND		ug/kg	2.46	2.46	2	B
Oxychlordane	ND		ug/kg	2.46	2.46	2	B
trans-Chlordane	ND		ug/kg	1.23	1.23	2	A
Endosulfan I	ND		ug/kg	1.23	1.23	2	A
cis-Chlordane	ND		ug/kg	1.23	1.23	2	A
trans-Nonachlor	ND		ug/kg	1.23	1.23	2	A
4,4'-DDE	1.88		ug/kg	1.23	1.23	2	B
Dieldrin	ND		ug/kg	1.23	1.23	2	A
Endrin	ND		ug/kg	1.23	1.23	2	A
Endosulfan II	ND		ug/kg	1.23	1.23	2	A
4,4'-DDD	ND		ug/kg	1.23	1.23	2	A
cis-Nonachlor	ND		ug/kg	1.23	1.23	2	A
4,4'-DDT	1.57	I	ug/kg	1.23	1.23	2	A
Methoxychlor	ND		ug/kg	12.3	12.3	2	A
Toxaphene	ND		ug/kg	61.8	61.8	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	34		30-150	A
BZ 198	49		30-150	A
DBOB	31		30-150	B
BZ 198	56		30-150	B



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-06 D
 Client ID: NHH-Z-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 11:53
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/28/17 22:33
 Analyst: DP
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.05	2.05	2	A
gamma-BHC	ND		ug/kg	1.03	1.03	2	A
Heptachlor	ND		ug/kg	1.03	1.03	2	A
Aldrin	ND		ug/kg	1.03	1.03	2	A
Heptachlor epoxide	ND		ug/kg	2.05	2.05	2	B
Oxychlordane	ND		ug/kg	2.05	2.05	2	B
trans-Chlordane	108	P	ug/kg	1.03	1.03	2	A
Endosulfan I	ND		ug/kg	1.03	1.03	2	A
cis-Chlordane	3.96		ug/kg	1.03	1.03	2	A
trans-Nonachlor	6.07		ug/kg	1.03	1.03	2	A
4,4'-DDE	13.9		ug/kg	1.03	1.03	2	A
Dieldrin	7.38	IP	ug/kg	1.03	1.03	2	A
Endrin	ND		ug/kg	1.03	1.03	2	A
Endosulfan II	6.61	IP	ug/kg	1.03	1.03	2	B
4,4'-DDD	6.62		ug/kg	1.03	1.03	2	A
cis-Nonachlor	ND		ug/kg	1.03	1.03	2	A
4,4'-DDT	11.5	IP	ug/kg	1.03	1.03	2	A
Methoxychlor	ND		ug/kg	10.3	10.3	2	A
Toxaphene	ND		ug/kg	51.5	51.5	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	79		30-150	A
DBOB	51		30-150	B
BZ 198	73		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-07
Client ID: NHH-N-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 13:05
Date Received: 08/08/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/28/17 23:07
Analyst: DP
Percent Solids: 64%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.766	0.766	1	A
gamma-BHC	ND		ug/kg	0.383	0.383	1	A
Heptachlor	ND		ug/kg	0.383	0.383	1	A
Aldrin	ND		ug/kg	0.383	0.383	1	A
Heptachlor epoxide	ND		ug/kg	0.766	0.766	1	B
Oxychlordane	ND		ug/kg	0.766	0.766	1	B
trans-Chlordane	ND		ug/kg	0.383	0.383	1	A
Endosulfan I	ND		ug/kg	0.383	0.383	1	A
cis-Chlordane	ND		ug/kg	0.383	0.383	1	A
trans-Nonachlor	0.515		ug/kg	0.383	0.383	1	B
4,4'-DDE	2.96		ug/kg	0.383	0.383	1	A
Dieldrin	0.552	IP	ug/kg	0.383	0.383	1	A
Endrin	ND		ug/kg	0.383	0.383	1	A
Endosulfan II	0.645	IP	ug/kg	0.383	0.383	1	B
4,4'-DDD	0.857		ug/kg	0.383	0.383	1	A
cis-Nonachlor	ND		ug/kg	0.383	0.383	1	A
4,4'-DDT	1.24	IP	ug/kg	0.383	0.383	1	A
Methoxychlor	ND		ug/kg	3.83	3.83	1	A
Toxaphene	ND		ug/kg	19.2	19.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		30-150	A
BZ 198	69		30-150	A
DBOB	45		30-150	B
BZ 198	73		30-150	B



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-08 D
 Client ID: NHH-O-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 14:45
 Date Received: 08/08/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/29/17 01:23
 Analyst: DP
 Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.34	2.34	2	A
gamma-BHC	ND		ug/kg	1.17	1.17	2	A
Heptachlor	ND		ug/kg	1.17	1.17	2	A
Aldrin	ND		ug/kg	1.17	1.17	2	A
Heptachlor epoxide	ND		ug/kg	2.34	2.34	2	B
Oxychlordane	ND		ug/kg	2.34	2.34	2	B
trans-Chlordane	ND		ug/kg	1.17	1.17	2	A
Endosulfan I	ND		ug/kg	1.17	1.17	2	A
cis-Chlordane	ND		ug/kg	1.17	1.17	2	A
trans-Nonachlor	ND		ug/kg	1.17	1.17	2	A
4,4'-DDE	2.22		ug/kg	1.17	1.17	2	B
Dieldrin	ND		ug/kg	1.17	1.17	2	A
Endrin	ND		ug/kg	1.17	1.17	2	A
Endosulfan II	ND		ug/kg	1.17	1.17	2	A
4,4'-DDD	ND		ug/kg	1.17	1.17	2	A
cis-Nonachlor	ND		ug/kg	1.17	1.17	2	A
4,4'-DDT	1.19	IP	ug/kg	1.17	1.17	2	A
Methoxychlor	ND		ug/kg	11.7	11.7	2	A
Toxaphene	ND		ug/kg	58.6	58.6	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	69		30-150	A
DBOB	43		30-150	B
BZ 198	81		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-09 **D**
Client ID: NHH-M
Sample Location: NEW HAVEN, CT

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 01:57
Analyst: DP
Percent Solids: 38%

Date Collected: 08/08/17 16:10
Date Received: 08/08/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.57	2.57	2	A
gamma-BHC	ND		ug/kg	1.28	1.28	2	A
Heptachlor	ND		ug/kg	1.28	1.28	2	A
Aldrin	ND		ug/kg	1.28	1.28	2	A
Heptachlor epoxide	ND		ug/kg	2.57	2.57	2	B
Oxychlordane	ND		ug/kg	2.57	2.57	2	B
trans-Chlordane	ND		ug/kg	1.28	1.28	2	A
Endosulfan I	ND		ug/kg	1.28	1.28	2	A
cis-Chlordane	ND		ug/kg	1.28	1.28	2	A
trans-Nonachlor	1.33		ug/kg	1.28	1.28	2	B
4,4'-DDE	3.17		ug/kg	1.28	1.28	2	A
Dieldrin	ND		ug/kg	1.28	1.28	2	A
Endrin	ND		ug/kg	1.28	1.28	2	A
Endosulfan II	1.48	IP	ug/kg	1.28	1.28	2	B
4,4'-DDD	ND		ug/kg	1.28	1.28	2	A
cis-Nonachlor	ND		ug/kg	1.28	1.28	2	A
4,4'-DDT	1.58	IP	ug/kg	1.28	1.28	2	A
Methoxychlor	ND		ug/kg	12.8	12.8	2	A
Toxaphene	ND		ug/kg	64.5	64.5	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	83		30-150	A
BZ 198	89		30-150	A
DBOB	65		30-150	B
BZ 198	102		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-10 D
Client ID: NHH-T-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 02:31
Analyst: DP
Percent Solids: 34%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.68	2.68	2	A
gamma-BHC	ND		ug/kg	1.34	1.34	2	A
Heptachlor	ND		ug/kg	1.34	1.34	2	A
Aldrin	ND		ug/kg	1.34	1.34	2	A
Heptachlor epoxide	ND		ug/kg	2.68	2.68	2	B
Oxychlordane	ND		ug/kg	2.68	2.68	2	B
trans-Chlordane	ND		ug/kg	1.34	1.34	2	A
Endosulfan I	ND		ug/kg	1.34	1.34	2	A
cis-Chlordane	ND		ug/kg	1.34	1.34	2	A
trans-Nonachlor	1.66		ug/kg	1.34	1.34	2	A
4,4'-DDE	4.56	P	ug/kg	1.34	1.34	2	B
Dieldrin	1.43	IP	ug/kg	1.34	1.34	2	A
Endrin	ND		ug/kg	1.34	1.34	2	A
Endosulfan II	1.92	IP	ug/kg	1.34	1.34	2	B
4,4'-DDD	1.44		ug/kg	1.34	1.34	2	B
cis-Nonachlor	ND		ug/kg	1.34	1.34	2	A
4,4'-DDT	1.69	IP	ug/kg	1.34	1.34	2	A
Methoxychlor	ND		ug/kg	13.4	13.4	2	A
Toxaphene	ND		ug/kg	67.4	67.4	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	81		30-150	A
DBOB	55		30-150	B
BZ 198	91		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-11 D
Client ID: NHH-T-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 03:05
Analyst: DP
Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.23	2.23	2	A
gamma-BHC	ND		ug/kg	1.12	1.12	2	A
Heptachlor	ND		ug/kg	1.12	1.12	2	A
Aldrin	ND		ug/kg	1.12	1.12	2	A
Heptachlor epoxide	ND		ug/kg	2.23	2.23	2	B
Oxychlordane	ND		ug/kg	2.23	2.23	2	B
trans-Chlordane	ND		ug/kg	1.12	1.12	2	A
Endosulfan I	ND		ug/kg	1.12	1.12	2	A
cis-Chlordane	4.01		ug/kg	1.12	1.12	2	A
trans-Nonachlor	6.28	P	ug/kg	1.12	1.12	2	A
4,4'-DDE	7.72		ug/kg	1.12	1.12	2	B
Dieldrin	3.52	IP	ug/kg	1.12	1.12	2	A
Endrin	ND		ug/kg	1.12	1.12	2	A
Endosulfan II	10.3	IP	ug/kg	1.12	1.12	2	B
4,4'-DDD	3.32		ug/kg	1.12	1.12	2	A
cis-Nonachlor	ND		ug/kg	1.12	1.12	2	A
4,4'-DDT	11.1		ug/kg	1.12	1.12	2	A
Methoxychlor	ND		ug/kg	11.2	11.2	2	A
Toxaphene	ND		ug/kg	56.0	56.0	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	83		30-150	A
DBOB	54		30-150	B
BZ 198	78		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/28/17 17:26
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-11 Batch: WG1031089-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	46		30-150	A
BZ 198	60		30-150	A
DBOB	45		30-150	B
BZ 198	58		30-150	B



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-11 Batch: WG1031089-2 WG1031089-3									
Hexachlorobenzene	50		50		50-120	0		30	A
gamma-BHC	53		51		50-120	4		30	A
Heptachlor	53		53		50-120	0		30	A
Aldrin	51		52		50-120	2		30	A
trans-Chlordane	64		64		50-120	0		30	A
Endosulfan I	63		62		50-120	2		30	A
cis-Chlordane	60		60		50-120	0		30	A
trans-Nonachlor	60		61		50-120	2		30	A
4,4'-DDE	74		75		50-120	1		30	A
Dieldrin	72		70		50-120	3		30	A
Endrin	63		63		50-120	0		30	A
4,4'-DDD	79		79		50-120	0		30	A
cis-Nonachlor	65		66		50-120	2		30	A
4,4'-DDT	81		81		50-120	0		30	A
Methoxychlor	75		73		50-120	3		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	55		53		30-150	A
BZ 198	83		79		30-150	A
DBOB	54		44		30-150	B
BZ 198	84		78		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-11 Batch: WG1031089-2 WG1031089-3									
Heptachlor epoxide	63		64		50-120	2		30	B
Oxychlordane	59		60		50-120	2		30	B
Endosulfan II	69		65		50-120	6		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	55		53		30-150	A
BZ 198	83		79		30-150	A
DBOB	54		44		30-150	B
BZ 198	84		78		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab NHH-N-TOP Associated sample(s): 01-11 QC Batch ID: WG1031089-6 WG1031089-7 QC Sample: L1727562-07 Client ID:													
Hexachlorobenzene	ND	76	39.2	52		40.8	54		50-120	4		30	A
gamma-BHC	ND	76	42.1	55		46.0	60		50-120	9		30	A
Heptachlor	ND	76	44.8	59		48.4	64		50-120	8		30	A
Aldrin	ND	76	47.0	62		49.9	65		50-120	6		30	A
Heptachlor epoxide	ND	76	49.1	65		50.9	67		50-120	4		30	B
Oxychlordane	ND	76	47.6	63		50.4	66		50-120	6		30	B
trans-Chlordane	ND	76	60.8	80		62.9	83		50-120	3		30	A
Endosulfan I	ND	76	51.1	67		55.2	72		50-120	8		30	A
cis-Chlordane	ND	76	51.0	67		53.3	70		50-120	4		30	A
trans-Nonachlor	ND	76	51.8	68		53.7	70		50-120	4		30	A
4,4'-DDE	2.96	76	67.6	85		71.2	90		50-120	5		30	A
Dieldrin	0.552	76	54.9	72		58.9	77		50-120	7		30	A
Endrin	ND	76	52.5	69		55.6	73		50-120	6		30	A
4,4'-DDD	0.857	76	67.0	87		70.8	92		50-120	6		30	A
cis-Nonachlor	ND	76	54.7	72		55.5	73		50-120	1		30	A
4,4'-DDT	1.24	76	57.3	74		61.9	80		50-120	8		30	A
Methoxychlor	ND	76	51.7	68		54.7	72		50-120	6		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
BZ 198	89		93		30-150	A
DBOB	58		63		30-150	A
BZ 198	104		98		30-150	B

Matrix Spike Analysis*Batch Quality Control***Project Name:** USACE/NHH FNP**Lab Number:** L1727562**Project Number:** 60543021**Report Date:** 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031089-6 WG1031089-7 QC Sample: L1727562-07 Client ID: NHH-N-TOP

Surrogate	MS % Recovery		Qualifier	MSD % Recovery		Qualifier	Acceptance Criteria	Column
DBOB	51			51			30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031089-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	0.515	0.530	ug/kg	3		30 B
4,4'-DDE	2.96	3.34	ug/kg	12		30 A
Dieldrin	0.552	0.577IP	ug/kg	4		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	0.645	0.634IP	ug/kg	2		30 B
4,4'-DDD	0.857	1.03	ug/kg	18		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	1.24	1.18IP	ug/kg	5		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031089-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		62		30-150	A
BZ 198	69		82		30-150	A
DBOB	45		57		30-150	B
BZ 198	73		88		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1031089-4

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	70		40-140
cis-Chlordane	79		40-140
trans-Nonachlor	220	Q	40-140
DBOB (Surrogate)	48		30-150
DBOB (Surrogate)	53		30-150
BZ 198 (Surrogate)	86		30-150
BZ 198 (Surrogate)	159	Q	30-150

METALS

Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-01

Date Collected: 08/08/17 09:22

Client ID: NHH-X-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.98		mg/kg	0.227	0.030	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Cadmium, Total	4.42		mg/kg	0.091	0.012	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Chromium, Total	133		mg/kg	0.907	0.212	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Copper, Total	234		mg/kg	0.907	0.088	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Lead, Total	175		mg/kg	0.272	0.066	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Mercury, Total	0.654		mg/kg	0.040	0.005	5	08/22/17 14:10	08/24/17 12:47	EPA 7474	1,7474	BV
Nickel, Total	37.1		mg/kg	0.454	0.121	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV
Zinc, Total	330		mg/kg	4.54	1.18	2	08/22/17 14:20	08/29/17 15:53	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-02

Date Collected: 08/08/17 09:22

Client ID: NHH-X-REP-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 35%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.9		mg/kg	0.213	0.028	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Cadmium, Total	5.34		mg/kg	0.085	0.011	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Chromium, Total	140		mg/kg	0.852	0.199	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Copper, Total	275		mg/kg	0.852	0.083	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Lead, Total	211		mg/kg	0.256	0.062	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Mercury, Total	0.704		mg/kg	0.042	0.005	5	08/22/17 14:10	08/24/17 12:49	EPA 7474	1,7474	BV
Nickel, Total	40.3		mg/kg	0.426	0.114	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV
Zinc, Total	390		mg/kg	4.26	1.11	2	08/22/17 14:20	08/29/17 16:53	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-03

Date Collected: 08/08/17 09:22

Client ID: NHH-X-BOTTOM

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.10		mg/kg	0.109	0.014	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Cadmium, Total	0.056		mg/kg	0.044	0.006	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Chromium, Total	6.98		mg/kg	0.436	0.102	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Copper, Total	3.47		mg/kg	0.436	0.042	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Lead, Total	3.15		mg/kg	0.131	0.032	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.017	0.002	5	08/22/17 14:10	08/24/17 12:52	EPA 7474	1,7474	BV
Nickel, Total	4.32		mg/kg	0.218	0.058	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV
Zinc, Total	13.9		mg/kg	2.18	0.567	2	08/22/17 14:20	08/29/17 16:58	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-04

Date Collected: 08/08/17 10:37

Client ID: NHH-Y-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.83		mg/kg	0.250	0.033	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Cadmium, Total	1.70		mg/kg	0.100	0.013	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Chromium, Total	69.8		mg/kg	1.00	0.234	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Copper, Total	125		mg/kg	1.00	0.097	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Lead, Total	71.8		mg/kg	0.300	0.073	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Mercury, Total	0.292		mg/kg	0.039	0.005	5	08/22/17 14:10	08/24/17 12:54	EPA 7474	1,7474	BV
Nickel, Total	25.0		mg/kg	0.501	0.134	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV
Zinc, Total	193		mg/kg	5.01	1.30	2	08/22/17 14:20	08/29/17 17:02	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-05

Date Collected: 08/08/17 11:53

Client ID: NHH-Z-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.90		mg/kg	0.246	0.032	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Cadmium, Total	1.06		mg/kg	0.098	0.013	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Chromium, Total	65.0		mg/kg	0.983	0.230	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Copper, Total	109		mg/kg	0.983	0.095	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Lead, Total	63.6		mg/kg	0.295	0.072	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Mercury, Total	0.728		mg/kg	0.035	0.004	5	08/22/17 14:10	08/24/17 13:06	EPA 7474	1,7474	BV
Nickel, Total	23.6		mg/kg	0.491	0.131	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV
Zinc, Total	191		mg/kg	4.91	1.28	2	08/22/17 14:20	08/29/17 17:06	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-06

Date Collected: 08/08/17 11:53

Client ID: NHH-Z-BOTTOM

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	12.2		mg/kg	0.166	0.022	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Cadmium, Total	7.85		mg/kg	0.066	0.009	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Chromium, Total	195		mg/kg	0.664	0.155	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Copper, Total	320		mg/kg	0.664	0.064	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Lead, Total	177		mg/kg	0.199	0.049	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Mercury, Total	0.826		mg/kg	0.031	0.004	5	08/22/17 14:10	08/24/17 13:09	EPA 7474	1,7474	BV
Nickel, Total	41.9		mg/kg	0.332	0.089	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV
Zinc, Total	534		mg/kg	3.32	0.863	2	08/22/17 14:20	08/29/17 17:10	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-07

Date Collected: 08/08/17 13:05

Client ID: NHH-N-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 64%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	5.58		mg/kg	0.129	0.017	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Cadmium, Total	1.05		mg/kg	0.052	0.007	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Chromium, Total	50.2		mg/kg	0.515	0.120	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Copper, Total	74.3		mg/kg	0.515	0.050	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Lead, Total	35.5		mg/kg	0.154	0.038	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Mercury, Total	0.202		mg/kg	0.021	0.003	5	08/22/17 14:10	08/24/17 12:37	EPA 7474	1,7474	BV
Nickel, Total	14.3		mg/kg	0.258	0.069	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV
Zinc, Total	113		mg/kg	2.58	0.670	2	08/22/17 14:20	08/29/17 15:57	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-08

Date Collected: 08/08/17 14:45

Client ID: NHH-O-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.16		mg/kg	0.206	0.027	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Cadmium, Total	0.691		mg/kg	0.082	0.011	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Chromium, Total	58.8		mg/kg	0.822	0.192	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Copper, Total	81.0		mg/kg	0.822	0.080	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Lead, Total	48.5		mg/kg	0.247	0.060	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Mercury, Total	0.252		mg/kg	0.032	0.004	5	08/22/17 14:10	08/24/17 13:11	EPA 7474	1,7474	BV
Nickel, Total	21.9		mg/kg	0.411	0.110	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV
Zinc, Total	159		mg/kg	4.11	1.07	2	08/22/17 14:20	08/29/17 17:14	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-09

Date Collected: 08/08/17 16:10

Client ID: NHH-M

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 38%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.36		mg/kg	0.225	0.030	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Cadmium, Total	0.763		mg/kg	0.090	0.012	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Chromium, Total	64.2		mg/kg	0.900	0.211	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Copper, Total	92.6		mg/kg	0.900	0.087	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Lead, Total	55.8		mg/kg	0.270	0.066	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Mercury, Total	0.274		mg/kg	0.034	0.004	5	08/22/17 14:10	08/24/17 13:14	EPA 7474	1,7474	BV
Nickel, Total	23.2		mg/kg	0.450	0.120	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV
Zinc, Total	170		mg/kg	4.50	1.17	2	08/22/17 14:20	08/29/17 17:18	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-10

Date Collected: 08/08/17 17:34

Client ID: NHH-T-TOP

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 34%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	8.77		mg/kg	0.240	0.032	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Cadmium, Total	0.886		mg/kg	0.096	0.013	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Chromium, Total	61.9		mg/kg	0.958	0.224	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Copper, Total	102		mg/kg	0.958	0.093	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Lead, Total	62.0		mg/kg	0.287	0.070	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Mercury, Total	0.254		mg/kg	0.039	0.005	5	08/22/17 14:10	08/24/17 13:16	EPA 7474	1,7474	BV
Nickel, Total	24.0		mg/kg	0.479	0.128	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV
Zinc, Total	183		mg/kg	4.79	1.24	2	08/22/17 14:20	08/29/17 17:22	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-11

Date Collected: 08/08/17 17:34

Client ID: NHH-T-BOTTOM

Date Received: 08/08/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.2		mg/kg	0.216	0.029	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Cadmium, Total	4.51		mg/kg	0.086	0.011	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Chromium, Total	153		mg/kg	0.863	0.202	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Copper, Total	266		mg/kg	0.863	0.084	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Lead, Total	193		mg/kg	0.259	0.063	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Mercury, Total	0.611		mg/kg	0.031	0.004	5	08/22/17 14:10	08/24/17 13:19	EPA 7474	1,7474	BV
Nickel, Total	43.6		mg/kg	0.431	0.115	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV
Zinc, Total	358		mg/kg	4.31	1.12	2	08/22/17 14:20	08/29/17 17:27	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1034116-1										
Arsenic, Total	ND		mg/kg	0.100	0.013	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Cadmium, Total	ND		mg/kg	0.040	0.005	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Chromium, Total	ND		mg/kg	0.400	0.094	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Copper, Total	ND		mg/kg	0.400	0.039	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Lead, Total	ND		mg/kg	0.120	0.029	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Nickel, Total	ND		mg/kg	0.200	0.053	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Zinc, Total	ND		mg/kg	2.00	0.520	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1034262-1										
Mercury, Total	ND		mg/kg	0.013	0.002	5	08/22/17 14:10	08/24/17 12:32	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1034116-2 SRM Lot Number: D093-540								
Arsenic, Total	105		-		70-130	-		20
Cadmium, Total	99		-		83-117	-		20
Chromium, Total	101		-		80-120	-		20
Copper, Total	100		-		82-118	-		20
Lead, Total	106		-		82-117	-		20
Nickel, Total	100		-		83-117	-		20
Zinc, Total	97		-		83-117	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1034262-2 SRM Lot Number: D093-540								
Mercury, Total	80		-		72-128	-		20

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1034116-3 WG1034116-4 QC Sample: L1727562-07 Client ID: NHH-N-TOP												
Arsenic, Total	5.58	11.5	16.1	92		16.4	95		75-125	2		20
Cadmium, Total	1.05	4.88	6.12	104		6.27	108		75-125	2		20
Chromium, Total	50.2	19.1	70.0	103		72.0	115		75-125	3		20
Copper, Total	74.3	23.9	95.8	90		100	108		75-125	4		20
Lead, Total	35.5	48.8	83.2	98		85.6	104		75-125	3		20
Nickel, Total	14.3	47.8	61.5	99		62.0	101		75-125	1		20
Zinc, Total	113.	47.8	154	86		160	99		75-125	4		20
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1034262-3 WG1034262-4 QC Sample: L1727562-07 Client ID: NHH-N-TOP												
Mercury, Total	0.202	0.859	1.10	104		1.04	109		80-120	6		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1034116-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Arsenic, Total	5.58	5.04	mg/kg	10		20
Cadmium, Total	1.05	0.813	mg/kg	25	Q	20
Chromium, Total	50.2	34.9	mg/kg	36	Q	20
Copper, Total	74.3	57.6	mg/kg	25	Q	20
Lead, Total	35.5	28.8	mg/kg	21	Q	20
Nickel, Total	14.3	11.1	mg/kg	25	Q	20
Zinc, Total	113.	89.2	mg/kg	24	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1034262-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Mercury, Total	0.202	0.222	mg/kg	9		20

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-01
Client ID: NHH-X-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	4.05		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	4.01		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	36.0		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	64.0		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-02
Client ID: NHH-X-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	4.55		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	4.31		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	35.2		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	64.8		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-03
Client ID: NHH-X-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 09:22
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.257		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.261		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	80.2		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	19.8		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-04
Client ID: NHH-Y-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 10:37
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.61		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.70		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	36.5		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	63.5		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-05
Client ID: NHH-Z-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.09		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.92		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	37.0		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	63.0		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-06
Client ID: NHH-Z-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 11:53
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.84		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.72		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	44.7		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	55.3		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-07

Client ID: NHH-N-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/08/17 13:05

Date Received: 08/08/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.30		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.06		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	64.2		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	35.8		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-08
Client ID: NHH-O-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 14:45
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.43		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.43		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	40.4		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	59.6		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-09
Client ID: NHH-M
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 16:10
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.36		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.52		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	38.2		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	61.8		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-10
Client ID: NHH-T-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.78		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.82		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	34.4		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	65.6		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1727562
Report Date: 08/29/17

SAMPLE RESULTS

Lab ID: L1727562-11
Client ID: NHH-T-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/08/17 17:34
Date Received: 08/08/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.56		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.64		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	41.4		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO
Moisture	58.6		%	0.100	0.100	1	-	08/11/17 11:39	121,2540G	KO



Project Name: USACE/NHH FNP

Lab Number: L1727562

Project Number: 60543021

Report Date: 08/29/17

Method Blank Analysis

Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab for sample(s): 01-11 Batch: WG1036551-1										
Total Organic Carbon (Rep1)	ND		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	ND		%	0.010	0.010	1	-	08/29/17 00:00	1,9060A	SP



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-11 Batch: WG1036551-2								
Total Organic Carbon (Rep1)	100		-		75-125	-		25
Total Organic Carbon (Rep2)	93		-		75-125	-		25

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1727562

Report Date: 08/29/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1036551-4 WG1036551-5 QC Sample: L1727562-07 Client ID: NHH-N-TOP												
Total Organic Carbon (Rep1)	1.30	0.944	2.35	111		1.88	60	Q	75-125	22		25
Total Organic Carbon (Rep2)	1.06	1.17	2.25	102		2.86	92		75-125	24		25

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

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Lab Number: L1727562

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Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1031120-1 QC Sample: L1727562-01 Client ID: NHH-X-TOP						
Solids, Total	36.0	35.7	%	1		10
Moisture	64	64.3	%	0		10
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1036551-3 QC Sample: L1727562-07 Client ID: NHH-N-TOP						
Total Organic Carbon (Rep1)	1.30	1.30	%	0		25
Total Organic Carbon (Rep2)	1.06	1.35	%	24		25

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Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727562-01A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-SRM METALS(),A2-SRM PAH(),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-SRM PCB(),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-RIM FORMS(),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14),A2-SRM PESTICIDES(),A2-SRM TOC()
L1727562-02A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-03A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-04A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727562-05A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-06A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-07A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-07A1	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-07A2	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727562-08A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-08A1	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		-
L1727562-08A2	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		-
L1727562-09A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-10A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727562-11A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

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projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	N/A
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No – see case narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see case narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – see case narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – see case narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV opening for all samples: Column II: hexachlorobenzene @30%, gamma-BHC @ 16%, delta-BHC @ 20%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	Trans-Nonachlor @ 220%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	SRM: BZ198 @ 159%	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1727562-07D: C14-BZ#52 @ 44%, C17-BZ#170 @ 34%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery			Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	N/A		In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	YES		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	YES		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

L172 7562

Page 1 of 2

Client/Project Name: USACE / NHH FMP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°			
Project Number: 60543021			Field Logbook No.:			GRAN SIZE - SIEVE METALS - 60204 / 7474-7413 PCBs - 8082 / 8270 SIN PESTICIDES - 80813 PAHs - 8270 D SIN TOL - 9060										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product					
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													Lab I.D.		Remarks			
Signature: 			Send Results/Report to: MART O'CONNELL KOZIK													TAT: GS-241A CHEM-STD					
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks	
NHH-X-TOP	8/8/17	0922	X		802/1602	SD	4°C	N/A	X	X	X	X	X	X	X		0-4'9"				
NHH-X-REP-TOP	8/8/17	0922	X			SD			X	X	X	X	X	X	X		REPLICATE - 0-4'9"				
NHH-X-BOTTOM	8/8/17	0922	X			SD			X	X	X	X	X	X	X		4'9"-8.0'				
NHH-Y-TOP	8/8/17	1037	X			SD			X	X	X	X	X	X	X		0-5'11"				
NHH-Y-BOTTOM	8/8/17	1037	X		802	SD			X								5'11"-8'6"				
NHH-Z-TOP	8/8/17	1153	X		802/1602	SD			X	X	X	X	X	X	X		0-5.0'				
NHH-Z-BOTTOM	8/8/17	1153	X			SD			X	X	X	X	X	X	X		5.0'-8'8"				
NHH-N-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0'				
NHH-N-MS-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0' MS				
NHH-N-MSD-TOP	8/8/17	1305	X			SD			X	X	X	X	X	X	X		0-6.0' MSD				
NHH-N-BOTTOM	8/8/17	1305	X		802	SD			X								6.0'-7'6"				
NHH-O-TOP	8/8/17	1445	X		802/1602	SD			X	X	X	X	X	X	X		0-8'3" 4"				
NHH-O-BOTTOM	8/8/17	1445	X		802	SD			X								8'8"-10'10"				
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY - AECOM			Date: 8/8/17 Time: 1847		Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 1847		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOWDOEN, MA											
Signature:			Date: 8/8/17 Time: 2138		Received by: (Print Name)/(Affiliation) 			Date: 8/8/17 Time: 2138													
Relinquished by: (Print Name)/(Affiliation) 			Date: Time:		Received by: (Print Name)/(Affiliation) 			Date: Time:													
Signature:			Date: Time:		Signature:			Date: Time:		Sample Shipped Via: UPS FedEx <u>Courier</u> Other										Temp blank: <u>Yes</u> No	

AECOM

CHAIN OF CUSTODY RECORD

Page 2 of 2

Client/Project Name: USACE / NHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number: 60543021			Field Logbook No.:			G-4W SIZE - SIEVE METALS - 6020A / 7474-747B PCBs - 8082 / 8270 SIN PESTICIDES - 8081B PAHS - 8270 DSIN TOC - 9060										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product			
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													Send Results/Report to: MARY SCONNELL KOZIC		TAT: GS 24TAT CHEM - STD		Lab I.D.		Remarks
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											
NHH-M	8/8/17	1610	X		807/1602	SD	4C	MA	X	X	X	X	X	X			0-6'9"		
NHH-T-TOP	8/8/17	1734	X		807/1607	SD	I	I	X	X	X	X	X	X			0-4'10"		
NHH-T-BOTTOM	8/8/17	1734	X		I	SD	I	I	X	X	X	X	X	X			4'10" - 16'4"		
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM			Date: 8/8/17 Time: 1847		Received by: (Print Name)/(Affiliation) XO MTH XHAR			Date: 8/8/17 Time: 1847		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WEST BOROUGH, MA ATTN: UZ POLSKA									
Signature: [Signature]			Date: 8/8/17 Time: 2138		Received by: (Print Name)/(Affiliation) [Signature]			Date: 8/8/17 Time: 2138		Sample Shipped Via: UPS FedEx Courier Other Temp blank Yes No									
Relinquished by: (Print Name)/(Affiliation) [Signature]			Date: [Blank] Time: [Blank]		Received by: (Print Name)/(Affiliation) [Signature]			Date: [Blank] Time: [Blank]											
Signature: [Blank]			Date: [Blank] Time: [Blank]		Signature: [Blank]			Date: [Blank] Time: [Blank]											



ANALYTICAL REPORT

Lab Number:	L1727788
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE-NHH FNP
Project Number:	60543021
Report Date:	09/01/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1727788-01	NHH-U-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1727788-02	NHH-U-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 09:05	08/09/17
L1727788-03	NHH-P-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/09/17
L1727788-04	NHH-P-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 12:19	08/10/17
L1727788-05	NHH-Q-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1727788-06	NHH-Q-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 14:27	08/09/17
L1727788-07	NHH-W-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 16:34	08/09/17
L1727788-08	NHH-V-TOP	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17
L1727788-09	NHH-V-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/09/17 17:45	08/09/17
L1727788-10	NHH-EB-CORE-080917	WATER	NEW HAVEN, CT	08/09/17 17:45	08/09/17

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

**CT DEP Reasonable Confidence Protocols
Laboratory Analysis
QA/QC Certification Form**

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed (including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CT DEP method-specific Reasonable Confidence Protocol documents)?	YES
1a	Were the method specified preservation and holding time requirements met?	YES
1b	VPH & EPH Methods Only: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)?	N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	YES
3	Were all samples received at an appropriate temperature (<6°C)?	YES
4	Were all QA/QC performance criteria specified in the CT DEP Reasonable Confidence Protocol documents achieved?	NO
5a	Were reporting limits specified or referenced on the chain-of-custody?	NO
5b	Were these reporting limits met?	N/A
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	YES
7	Are project-specific matrix spikes and laboratory duplicates included in this data set?	NO

Note: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or question B is "No", the data package does not meet the requirements for "Reasonable Confidence".



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

RCP Related Narratives

Pesticides

In reference to question 4:

L1727788-10: The surrogate recovery is outside the individual acceptance criteria for BZ 198 (156%), but within the overall method allowances.

The WG1031089-4 SRM recovery for trans-Nonachlor (220%) and the surrogate BZ 198 column B (159%), are above the acceptance criteria.

WG1032133-3: The surrogate recovery is outside the individual acceptance criteria for BZ 198 (163%), but within the overall method allowances.

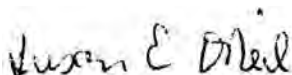
Total Organic Carbon

In reference to question 4:

The WG1037558-4 MS recovery for total organic carbon (rep2) (68%) performed on L1727788-03, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria indicating the sample batch was in control, and all sample results were accepted.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 09/01/17

ORGANICS

SEMIVOLATILES

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-01
 Client ID: NHH-U-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 09:05
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 17:03
 Analyst: GP
 Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	82.5		ug/kg	14.0	6.98	1
Acenaphthylene	85.7		ug/kg	14.0	6.98	1
Acenaphthene	32.3		ug/kg	14.0	6.98	1
Fluorene	26.4		ug/kg	14.0	6.98	1
Phenanthrene	215		ug/kg	14.0	6.98	1
Anthracene	105		ug/kg	14.0	6.98	1
Fluoranthene	982		ug/kg	14.0	6.98	1
Pyrene	724		ug/kg	14.0	6.98	1
Benz(a)anthracene	376		ug/kg	14.0	6.98	1
Chrysene	491		ug/kg	14.0	6.98	1
Benzo(b)fluoranthene	528		ug/kg	14.0	6.98	1
Benzo(k)fluoranthene	400		ug/kg	14.0	6.98	1
Benzo(a)pyrene	440		ug/kg	14.0	6.98	1
Indeno(1,2,3-cd)Pyrene	365		ug/kg	14.0	6.98	1
Dibenz(a,h)anthracene	76.3		ug/kg	14.0	6.98	1
Benzo(ghi)perylene	372		ug/kg	14.0	6.98	1
Cl2-BZ#8	ND		ug/kg	1.40	0.698	1
Cl3-BZ#18	0.983	J	ug/kg	1.40	0.698	1
Cl3-BZ#28	4.39		ug/kg	1.40	0.698	1
Cl4-BZ#44	1.94		ug/kg	1.40	0.698	1
Cl4-BZ#49	2.00		ug/kg	1.40	0.698	1
Cl4-BZ#52	3.32		ug/kg	1.40	0.698	1
Cl4-BZ#66	2.34		ug/kg	1.40	0.698	1
Cl5-BZ#87	0.966	J	ug/kg	1.40	0.698	1
Cl5-BZ#101	4.60		ug/kg	1.40	0.698	1
Cl5-BZ#105	1.83		ug/kg	1.40	0.698	1
Cl5-BZ#118	3.95		ug/kg	1.40	0.698	1
Cl6-BZ#128	1.23	J	ug/kg	1.40	0.698	1
Cl6-BZ#138	5.18		ug/kg	1.40	0.698	1
Cl6-BZ#153	4.39		ug/kg	1.40	0.698	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-01

Date Collected: 08/09/17 09:05

Client ID: NHH-U-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.72		ug/kg	1.40	0.698	1
Cl7-BZ#180	2.88		ug/kg	1.40	0.698	1
Cl7-BZ#183	0.734	J	ug/kg	1.40	0.698	1
Cl7-BZ#184	ND		ug/kg	1.40	0.698	1
Cl7-BZ#187	2.06		ug/kg	1.40	0.698	1
Cl8-BZ#195	ND		ug/kg	1.40	0.698	1
Cl9-BZ#206	0.825	J	ug/kg	1.40	0.698	1
Cl10-BZ#209	0.738	J	ug/kg	1.40	0.698	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	66		30-150
Pyrene-d10	70		30-150
Benzo(b)fluoranthene-d12	68		30-150
DBOB	74		30-150
BZ 198	74		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-02
 Client ID: NHH-U-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 09:05
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 17:37
 Analyst: GP
 Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	771		ug/kg	11.7	5.86	1
Acenaphthylene	203		ug/kg	11.7	5.86	1
Acenaphthene	86.3		ug/kg	11.7	5.86	1
Fluorene	154		ug/kg	11.7	5.86	1
Phenanthrene	909		ug/kg	11.7	5.86	1
Anthracene	233		ug/kg	11.7	5.86	1
Fluoranthene	1600		ug/kg	11.7	5.86	1
Pyrene	1290		ug/kg	11.7	5.86	1
Benz(a)anthracene	690		ug/kg	11.7	5.86	1
Chrysene	815		ug/kg	11.7	5.86	1
Benzo(b)fluoranthene	828		ug/kg	11.7	5.86	1
Benzo(k)fluoranthene	569		ug/kg	11.7	5.86	1
Benzo(a)pyrene	684		ug/kg	11.7	5.86	1
Indeno(1,2,3-cd)Pyrene	484		ug/kg	11.7	5.86	1
Dibenz(a,h)anthracene	143		ug/kg	11.7	5.86	1
Benzo(ghi)perylene	570		ug/kg	11.7	5.86	1
Cl2-BZ#8	5.07		ug/kg	1.17	0.586	1
Cl3-BZ#18	25.1		ug/kg	1.17	0.586	1
Cl3-BZ#28	11.7		ug/kg	1.17	0.586	1
Cl4-BZ#44	43.9		ug/kg	1.17	0.586	1
Cl4-BZ#49	33.7		ug/kg	1.17	0.586	1
Cl4-BZ#52	58.4		ug/kg	1.17	0.586	1
Cl4-BZ#66	41.5		ug/kg	1.17	0.586	1
Cl5-BZ#87	16.4		ug/kg	1.17	0.586	1
Cl5-BZ#101	48.7		ug/kg	1.17	0.586	1
Cl5-BZ#105	21.0		ug/kg	1.17	0.586	1
Cl5-BZ#118	37.6		ug/kg	1.17	0.586	1
Cl6-BZ#128	9.63		ug/kg	1.17	0.586	1
Cl6-BZ#138	39.3		ug/kg	1.17	0.586	1
Cl6-BZ#153	32.6		ug/kg	1.17	0.586	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-02
 Client ID: NHH-U-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 09:05
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	13.0		ug/kg	1.17	0.586	1
Cl7-BZ#180	25.3		ug/kg	1.17	0.586	1
Cl7-BZ#183	6.48		ug/kg	1.17	0.586	1
Cl7-BZ#184	1.61		ug/kg	1.17	0.586	1
Cl7-BZ#187	15.5		ug/kg	1.17	0.586	1
Cl8-BZ#195	2.56		ug/kg	1.17	0.586	1
Cl9-BZ#206	4.44		ug/kg	1.17	0.586	1
Cl10-BZ#209	1.95		ug/kg	1.17	0.586	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	59		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	68		30-150
BZ 198	72		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-03
 Client ID: NHH-P-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 18:11
 Analyst: GP
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	253		ug/kg	11.1	5.56	1
Acenaphthylene	142		ug/kg	11.1	5.56	1
Acenaphthene	47.4		ug/kg	11.1	5.56	1
Fluorene	71.1		ug/kg	11.1	5.56	1
Phenanthrene	488		ug/kg	11.1	5.56	1
Anthracene	153		ug/kg	11.1	5.56	1
Fluoranthene	1290		ug/kg	11.1	5.56	1
Pyrene	1020		ug/kg	11.1	5.56	1
Benz(a)anthracene	574		ug/kg	11.1	5.56	1
Chrysene	706		ug/kg	11.1	5.56	1
Benzo(b)fluoranthene	792		ug/kg	11.1	5.56	1
Benzo(k)fluoranthene	471		ug/kg	11.1	5.56	1
Benzo(a)pyrene	628		ug/kg	11.1	5.56	1
Indeno(1,2,3-cd)Pyrene	453		ug/kg	11.1	5.56	1
Dibenz(a,h)anthracene	133		ug/kg	11.1	5.56	1
Benzo(ghi)perylene	513		ug/kg	11.1	5.56	1
Cl2-BZ#8	2.06		ug/kg	1.11	0.556	1
Cl3-BZ#18	3.95		ug/kg	1.11	0.556	1
Cl3-BZ#28	3.98		ug/kg	1.11	0.556	1
Cl4-BZ#44	7.98		ug/kg	1.11	0.556	1
Cl4-BZ#49	6.53		ug/kg	1.11	0.556	1
Cl4-BZ#52	10.6		ug/kg	1.11	0.556	1
Cl4-BZ#66	8.08		ug/kg	1.11	0.556	1
Cl5-BZ#87	3.56		ug/kg	1.11	0.556	1
Cl5-BZ#101	10.5		ug/kg	1.11	0.556	1
Cl5-BZ#105	2.58		ug/kg	1.11	0.556	1
Cl5-BZ#118	9.22		ug/kg	1.11	0.556	1
Cl6-BZ#128	1.96		ug/kg	1.11	0.556	1
Cl6-BZ#138	11.4		ug/kg	1.11	0.556	1
Cl6-BZ#153	10.6		ug/kg	1.11	0.556	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-03
 Client ID: NHH-P-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	3.35		ug/kg	1.11	0.556	1
CI7-BZ#180	7.82		ug/kg	1.11	0.556	1
CI7-BZ#183	2.22		ug/kg	1.11	0.556	1
CI7-BZ#184	ND		ug/kg	1.11	0.556	1
CI7-BZ#187	5.20		ug/kg	1.11	0.556	1
CI8-BZ#195	1.12		ug/kg	1.11	0.556	1
CI9-BZ#206	3.06		ug/kg	1.11	0.556	1
CI10-BZ#209	3.06		ug/kg	1.11	0.556	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	66		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	75		30-150
BZ 198	70		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-04
 Client ID: NHH-P-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 18:45
 Analyst: GP
 Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	234		ug/kg	11.0	5.48	1
Acenaphthylene	128		ug/kg	11.0	5.48	1
Acenaphthene	42.3		ug/kg	11.0	5.48	1
Fluorene	63.7		ug/kg	11.0	5.48	1
Phenanthrene	480		ug/kg	11.0	5.48	1
Anthracene	156		ug/kg	11.0	5.48	1
Fluoranthene	1320		ug/kg	11.0	5.48	1
Pyrene	952		ug/kg	11.0	5.48	1
Benz(a)anthracene	526		ug/kg	11.0	5.48	1
Chrysene	676		ug/kg	11.0	5.48	1
Benzo(b)fluoranthene	721		ug/kg	11.0	5.48	1
Benzo(k)fluoranthene	486		ug/kg	11.0	5.48	1
Benzo(a)pyrene	585		ug/kg	11.0	5.48	1
Indeno(1,2,3-cd)Pyrene	432		ug/kg	11.0	5.48	1
Dibenz(a,h)anthracene	127		ug/kg	11.0	5.48	1
Benzo(ghi)perylene	479		ug/kg	11.0	5.48	1
Cl2-BZ#8	2.41		ug/kg	1.10	0.548	1
Cl3-BZ#18	2.56		ug/kg	1.10	0.548	1
Cl3-BZ#28	3.62		ug/kg	1.10	0.548	1
Cl4-BZ#44	8.39		ug/kg	1.10	0.548	1
Cl4-BZ#49	5.72		ug/kg	1.10	0.548	1
Cl4-BZ#52	7.28		ug/kg	1.10	0.548	1
Cl4-BZ#66	7.06		ug/kg	1.10	0.548	1
Cl5-BZ#87	3.49		ug/kg	1.10	0.548	1
Cl5-BZ#101	11.7		ug/kg	1.10	0.548	1
Cl5-BZ#105	ND		ug/kg	1.10	0.548	1
Cl5-BZ#118	12.1		ug/kg	1.10	0.548	1
Cl6-BZ#128	2.48		ug/kg	1.10	0.548	1
Cl6-BZ#138	11.7		ug/kg	1.10	0.548	1
Cl6-BZ#153	10.4		ug/kg	1.10	0.548	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-04
 Client ID: NHH-P-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/10/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	4.19		ug/kg	1.10	0.548	1
Cl7-BZ#180	7.06		ug/kg	1.10	0.548	1
Cl7-BZ#183	1.99		ug/kg	1.10	0.548	1
Cl7-BZ#184	ND		ug/kg	1.10	0.548	1
Cl7-BZ#187	5.46		ug/kg	1.10	0.548	1
Cl8-BZ#195	1.25		ug/kg	1.10	0.548	1
Cl9-BZ#206	2.89		ug/kg	1.10	0.548	1
Cl10-BZ#209	2.71		ug/kg	1.10	0.548	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	64		30-150
DBOB	68		30-150
BZ 198	63		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-05
 Client ID: NHH-Q-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 14:27
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 19:18
 Analyst: GP
 Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	68.0		ug/kg	13.6	6.78	1
Acenaphthylene	72.9		ug/kg	13.6	6.78	1
Acenaphthene	15.0		ug/kg	13.6	6.78	1
Fluorene	18.7		ug/kg	13.6	6.78	1
Phenanthrene	190		ug/kg	13.6	6.78	1
Anthracene	85.5		ug/kg	13.6	6.78	1
Fluoranthene	768		ug/kg	13.6	6.78	1
Pyrene	600		ug/kg	13.6	6.78	1
Benz(a)anthracene	321		ug/kg	13.6	6.78	1
Chrysene	405		ug/kg	13.6	6.78	1
Benzo(b)fluoranthene	497		ug/kg	13.6	6.78	1
Benzo(k)fluoranthene	311		ug/kg	13.6	6.78	1
Benzo(a)pyrene	395		ug/kg	13.6	6.78	1
Indeno(1,2,3-cd)Pyrene	304		ug/kg	13.6	6.78	1
Dibenz(a,h)anthracene	84.0		ug/kg	13.6	6.78	1
Benzo(ghi)perylene	328		ug/kg	13.6	6.78	1
Cl2-BZ#8	1.50		ug/kg	1.36	0.678	1
Cl3-BZ#18	1.18	J	ug/kg	1.36	0.678	1
Cl3-BZ#28	1.68		ug/kg	1.36	0.678	1
Cl4-BZ#44	1.75		ug/kg	1.36	0.678	1
Cl4-BZ#49	1.62		ug/kg	1.36	0.678	1
Cl4-BZ#52	3.25		ug/kg	1.36	0.678	1
Cl4-BZ#66	2.43		ug/kg	1.36	0.678	1
Cl5-BZ#87	ND		ug/kg	1.36	0.678	1
Cl5-BZ#101	4.12		ug/kg	1.36	0.678	1
Cl5-BZ#105	ND		ug/kg	1.36	0.678	1
Cl5-BZ#118	4.30		ug/kg	1.36	0.678	1
Cl6-BZ#128	1.30	J	ug/kg	1.36	0.678	1
Cl6-BZ#138	4.49		ug/kg	1.36	0.678	1
Cl6-BZ#153	4.26		ug/kg	1.36	0.678	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-05
 Client ID: NHH-Q-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 14:27
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	1.83		ug/kg	1.36	0.678	1
CI7-BZ#180	2.53		ug/kg	1.36	0.678	1
CI7-BZ#183	0.795	J	ug/kg	1.36	0.678	1
CI7-BZ#184	ND		ug/kg	1.36	0.678	1
CI7-BZ#187	2.11		ug/kg	1.36	0.678	1
CI8-BZ#195	ND		ug/kg	1.36	0.678	1
CI9-BZ#206	0.892	J	ug/kg	1.36	0.678	1
CI10-BZ#209	0.859	J	ug/kg	1.36	0.678	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	60		30-150
DBOB	66		30-150
BZ 198	69		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-06
 Client ID: NHH-Q-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 14:27
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 19:51
 Analyst: GP
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	1460		ug/kg	11.3	5.65	1
Acenaphthylene	238		ug/kg	11.3	5.65	1
Acenaphthene	81.1		ug/kg	11.3	5.65	1
Fluorene	142		ug/kg	11.3	5.65	1
Phenanthrene	1060		ug/kg	11.3	5.65	1
Anthracene	255		ug/kg	11.3	5.65	1
Fluoranthene	1710		ug/kg	11.3	5.65	1
Pyrene	1480		ug/kg	11.3	5.65	1
Benz(a)anthracene	788		ug/kg	11.3	5.65	1
Chrysene	943		ug/kg	11.3	5.65	1
Benzo(b)fluoranthene	912		ug/kg	11.3	5.65	1
Benzo(k)fluoranthene	663		ug/kg	11.3	5.65	1
Benzo(a)pyrene	774		ug/kg	11.3	5.65	1
Indeno(1,2,3-cd)Pyrene	550		ug/kg	11.3	5.65	1
Dibenz(a,h)anthracene	159		ug/kg	11.3	5.65	1
Benzo(ghi)perylene	594		ug/kg	11.3	5.65	1
Cl2-BZ#8	4.83		ug/kg	1.13	0.565	1
Cl3-BZ#18	17.8		ug/kg	1.13	0.565	1
Cl3-BZ#28	18.3		ug/kg	1.13	0.565	1
Cl4-BZ#44	36.5		ug/kg	1.13	0.565	1
Cl4-BZ#49	28.3		ug/kg	1.13	0.565	1
Cl4-BZ#52	40.4		ug/kg	1.13	0.565	1
Cl4-BZ#66	34.5		ug/kg	1.13	0.565	1
Cl5-BZ#87	18.8		ug/kg	1.13	0.565	1
Cl5-BZ#101	45.6		ug/kg	1.13	0.565	1
Cl5-BZ#105	14.8		ug/kg	1.13	0.565	1
Cl5-BZ#118	43.1		ug/kg	1.13	0.565	1
Cl6-BZ#128	10.6		ug/kg	1.13	0.565	1
Cl6-BZ#138	44.1		ug/kg	1.13	0.565	1
Cl6-BZ#153	36.3		ug/kg	1.13	0.565	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-06
 Client ID: NHH-Q-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 14:27
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	14.3		ug/kg	1.13	0.565	1
Cl7-BZ#180	25.5		ug/kg	1.13	0.565	1
Cl7-BZ#183	6.74		ug/kg	1.13	0.565	1
Cl7-BZ#184	ND		ug/kg	1.13	0.565	1
Cl7-BZ#187	16.2		ug/kg	1.13	0.565	1
Cl8-BZ#195	3.05		ug/kg	1.13	0.565	1
Cl9-BZ#206	4.79		ug/kg	1.13	0.565	1
Cl10-BZ#209	2.25		ug/kg	1.13	0.565	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	61		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	70		30-150
BZ 198	76		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-07
 Client ID: NHH-W-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 16:34
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 20:24
 Analyst: GP
 Percent Solids: 46%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	354		ug/kg	10.8	5.39	1
Acenaphthylene	100		ug/kg	10.8	5.39	1
Acenaphthene	37.4		ug/kg	10.8	5.39	1
Fluorene	53.6		ug/kg	10.8	5.39	1
Phenanthrene	290		ug/kg	10.8	5.39	1
Anthracene	143		ug/kg	10.8	5.39	1
Fluoranthene	887		ug/kg	10.8	5.39	1
Pyrene	672		ug/kg	10.8	5.39	1
Benz(a)anthracene	376		ug/kg	10.8	5.39	1
Chrysene	436		ug/kg	10.8	5.39	1
Benzo(b)fluoranthene	489		ug/kg	10.8	5.39	1
Benzo(k)fluoranthene	288		ug/kg	10.8	5.39	1
Benzo(a)pyrene	390		ug/kg	10.8	5.39	1
Indeno(1,2,3-cd)Pyrene	285		ug/kg	10.8	5.39	1
Dibenz(a,h)anthracene	80.6		ug/kg	10.8	5.39	1
Benzo(ghi)perylene	313		ug/kg	10.8	5.39	1
Cl2-BZ#8	1.68		ug/kg	1.08	0.539	1
Cl3-BZ#18	3.57		ug/kg	1.08	0.539	1
Cl3-BZ#28	5.22		ug/kg	1.08	0.539	1
Cl4-BZ#44	9.29		ug/kg	1.08	0.539	1
Cl4-BZ#49	7.74		ug/kg	1.08	0.539	1
Cl4-BZ#52	11.3		ug/kg	1.08	0.539	1
Cl4-BZ#66	7.46		ug/kg	1.08	0.539	1
Cl5-BZ#87	3.48		ug/kg	1.08	0.539	1
Cl5-BZ#101	11.6		ug/kg	1.08	0.539	1
Cl5-BZ#105	6.90		ug/kg	1.08	0.539	1
Cl5-BZ#118	9.30		ug/kg	1.08	0.539	1
Cl6-BZ#128	3.09		ug/kg	1.08	0.539	1
Cl6-BZ#138	12.2		ug/kg	1.08	0.539	1
Cl6-BZ#153	10.7		ug/kg	1.08	0.539	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-07
 Client ID: NHH-W-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 16:34
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	3.78		ug/kg	1.08	0.539	1
CI7-BZ#180	6.83		ug/kg	1.08	0.539	1
CI7-BZ#183	1.87		ug/kg	1.08	0.539	1
CI7-BZ#184	0.847	J	ug/kg	1.08	0.539	1
CI7-BZ#187	5.05		ug/kg	1.08	0.539	1
CI8-BZ#195	1.27		ug/kg	1.08	0.539	1
CI9-BZ#206	1.88		ug/kg	1.08	0.539	1
CI10-BZ#209	0.922	J	ug/kg	1.08	0.539	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	58		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	65		30-150
BZ 198	60		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-08
 Client ID: NHH-V-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 20:57
 Analyst: GP
 Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	117		ug/kg	11.4	5.73	1
Acenaphthylene	106		ug/kg	11.4	5.73	1
Acenaphthene	52.8		ug/kg	11.4	5.73	1
Fluorene	48.9		ug/kg	11.4	5.73	1
Phenanthrene	349		ug/kg	11.4	5.73	1
Anthracene	121		ug/kg	11.4	5.73	1
Fluoranthene	979		ug/kg	11.4	5.73	1
Pyrene	803		ug/kg	11.4	5.73	1
Benz(a)anthracene	462		ug/kg	11.4	5.73	1
Chrysene	429		ug/kg	11.4	5.73	1
Benzo(b)fluoranthene	640		ug/kg	11.4	5.73	1
Benzo(k)fluoranthene	256		ug/kg	11.4	5.73	1
Benzo(a)pyrene	393		ug/kg	11.4	5.73	1
Indeno(1,2,3-cd)Pyrene	320		ug/kg	11.4	5.73	1
Dibenz(a,h)anthracene	87.0		ug/kg	11.4	5.73	1
Benzo(ghi)perylene	352		ug/kg	11.4	5.73	1
Cl2-BZ#8	2.15		ug/kg	1.14	0.573	1
Cl3-BZ#18	3.65		ug/kg	1.14	0.573	1
Cl3-BZ#28	2.94		ug/kg	1.14	0.573	1
Cl4-BZ#44	9.29		ug/kg	1.14	0.573	1
Cl4-BZ#49	6.66		ug/kg	1.14	0.573	1
Cl4-BZ#52	8.19		ug/kg	1.14	0.573	1
Cl4-BZ#66	4.86		ug/kg	1.14	0.573	1
Cl5-BZ#87	1.34		ug/kg	1.14	0.573	1
Cl5-BZ#101	8.01		ug/kg	1.14	0.573	1
Cl5-BZ#105	15.0		ug/kg	1.14	0.573	1
Cl5-BZ#118	4.96		ug/kg	1.14	0.573	1
Cl6-BZ#128	0.994	J	ug/kg	1.14	0.573	1
Cl6-BZ#138	7.34		ug/kg	1.14	0.573	1
Cl6-BZ#153	6.10		ug/kg	1.14	0.573	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-08
 Client ID: NHH-V-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	1.68		ug/kg	1.14	0.573	1
CI7-BZ#180	4.72		ug/kg	1.14	0.573	1
CI7-BZ#183	1.38		ug/kg	1.14	0.573	1
CI7-BZ#184	1.90		ug/kg	1.14	0.573	1
CI7-BZ#187	2.85		ug/kg	1.14	0.573	1
CI8-BZ#195	ND		ug/kg	1.14	0.573	1
CI9-BZ#206	1.25		ug/kg	1.14	0.573	1
CI10-BZ#209	0.852	J	ug/kg	1.14	0.573	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	63		30-150
Benzo(b)fluoranthene-d12	60		30-150
DBOB	69		30-150
BZ 198	74		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-09
 Client ID: NHH-V-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/17/17 21:30
 Analyst: GP
 Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	1340		ug/kg	11.9	5.94	1
Acenaphthylene	199		ug/kg	11.9	5.94	1
Acenaphthene	67.1		ug/kg	11.9	5.94	1
Fluorene	178		ug/kg	11.9	5.94	1
Phenanthrene	643		ug/kg	11.9	5.94	1
Anthracene	221		ug/kg	11.9	5.94	1
Fluoranthene	1400		ug/kg	11.9	5.94	1
Pyrene	1070		ug/kg	11.9	5.94	1
Benz(a)anthracene	621		ug/kg	11.9	5.94	1
Chrysene	730		ug/kg	11.9	5.94	1
Benzo(b)fluoranthene	824		ug/kg	11.9	5.94	1
Benzo(k)fluoranthene	456		ug/kg	11.9	5.94	1
Benzo(a)pyrene	635		ug/kg	11.9	5.94	1
Indeno(1,2,3-cd)Pyrene	452		ug/kg	11.9	5.94	1
Dibenz(a,h)anthracene	124		ug/kg	11.9	5.94	1
Benzo(ghi)perylene	499		ug/kg	11.9	5.94	1
Cl2-BZ#8	4.08		ug/kg	1.19	0.594	1
Cl3-BZ#18	11.2		ug/kg	1.19	0.594	1
Cl3-BZ#28	10.3		ug/kg	1.19	0.594	1
Cl4-BZ#44	22.0		ug/kg	1.19	0.594	1
Cl4-BZ#49	20.1		ug/kg	1.19	0.594	1
Cl4-BZ#52	28.4		ug/kg	1.19	0.594	1
Cl4-BZ#66	20.3		ug/kg	1.19	0.594	1
Cl5-BZ#87	6.80		ug/kg	1.19	0.594	1
Cl5-BZ#101	22.8		ug/kg	1.19	0.594	1
Cl5-BZ#105	21.2		ug/kg	1.19	0.594	1
Cl5-BZ#118	18.8		ug/kg	1.19	0.594	1
Cl6-BZ#128	4.59		ug/kg	1.19	0.594	1
Cl6-BZ#138	22.1		ug/kg	1.19	0.594	1
Cl6-BZ#153	20.1		ug/kg	1.19	0.594	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-09
 Client ID: NHH-V-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	7.82		ug/kg	1.19	0.594	1
Cl7-BZ#180	13.4		ug/kg	1.19	0.594	1
Cl7-BZ#183	3.62		ug/kg	1.19	0.594	1
Cl7-BZ#184	3.89		ug/kg	1.19	0.594	1
Cl7-BZ#187	9.36		ug/kg	1.19	0.594	1
Cl8-BZ#195	1.29		ug/kg	1.19	0.594	1
Cl9-BZ#206	3.25		ug/kg	1.19	0.594	1
Cl10-BZ#209	1.77		ug/kg	1.19	0.594	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	65		30-150
Benzo(b)fluoranthene-d12	61		30-150
DBOB	66		30-150
BZ 198	61		30-150

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-10
 Client ID: NHH-EB-CORE-080917
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/15/17 15:15

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/16/17 20:30
 Analyst: GP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	20.6		ng/l	10.1	5.05	1
Acenaphthylene	ND		ng/l	10.1	5.05	1
Acenaphthene	ND		ng/l	10.1	5.05	1
Fluorene	ND		ng/l	10.1	5.05	1
Phenanthrene	ND		ng/l	10.1	5.05	1
Anthracene	ND		ng/l	10.1	5.05	1
Fluoranthene	ND		ng/l	10.1	5.05	1
Pyrene	ND		ng/l	10.1	5.05	1
Benz(a)anthracene	ND		ng/l	10.1	5.05	1
Chrysene	ND		ng/l	10.1	5.05	1
Benzo(b)fluoranthene	ND		ng/l	10.1	5.05	1
Benzo(k)fluoranthene	ND		ng/l	10.1	5.05	1
Benzo(a)pyrene	ND		ng/l	10.1	5.05	1
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.1	5.05	1
Dibenz(a,h)anthracene	ND		ng/l	10.1	5.05	1
Benzo(ghi)perylene	ND		ng/l	10.1	5.05	1
Cl2-BZ#8	ND		ng/l	1.01	0.505	1
Cl3-BZ#18	ND		ng/l	1.01	0.505	1
Cl3-BZ#28	ND		ng/l	1.01	0.505	1
Cl4-BZ#44	ND		ng/l	1.01	0.505	1
Cl4-BZ#49	ND		ng/l	1.01	0.505	1
Cl4-BZ#52	ND		ng/l	1.01	0.505	1
Cl4-BZ#66	ND		ng/l	1.01	0.505	1
Cl5-BZ#87	ND		ng/l	1.01	0.505	1
Cl5-BZ#101	ND		ng/l	1.01	0.505	1
Cl5-BZ#105	ND		ng/l	1.01	0.505	1
Cl5-BZ#118	ND		ng/l	1.01	0.505	1
Cl6-BZ#128	ND		ng/l	1.01	0.505	1
Cl6-BZ#138	ND		ng/l	1.01	0.505	1
Cl6-BZ#153	ND		ng/l	1.01	0.505	1



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-10
 Client ID: NHH-EB-CORE-080917
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ng/l	1.01	0.505	1
CI7-BZ#180	ND		ng/l	1.01	0.505	1
CI7-BZ#183	ND		ng/l	1.01	0.505	1
CI7-BZ#184	ND		ng/l	1.01	0.505	1
CI7-BZ#187	ND		ng/l	1.01	0.505	1
CI8-BZ#195	ND		ng/l	1.01	0.505	1
CI9-BZ#206	ND		ng/l	1.01	0.505	1
CI10-BZ#209	ND		ng/l	1.01	0.505	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	68		30-150
BZ 198	58		30-150

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 08/16/17 18:53

Extraction Date: 08/11/17 16:34

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-09 Batch: WG1031095-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 08/16/17 18:53

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 08/11/17 16:34

Cleanup Method: EPA 3630

Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-09 Batch: WG1031095-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	62		30-150
BZ 198	63		30-150



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/16/17 17:17

Extraction Date: 08/15/17 15:15

Analyst: GP

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 10 Batch: WG1032132-1					
Naphthalene	ND		ng/l	10.0	5.00
Acenaphthylene	ND		ng/l	10.0	5.00
Acenaphthene	ND		ng/l	10.0	5.00
Fluorene	ND		ng/l	10.0	5.00
Phenanthrene	ND		ng/l	10.0	5.00
Anthracene	ND		ng/l	10.0	5.00
Fluoranthene	ND		ng/l	10.0	5.00
Pyrene	ND		ng/l	10.0	5.00
Benz(a)anthracene	ND		ng/l	10.0	5.00
Chrysene	ND		ng/l	10.0	5.00
Benzo(b)fluoranthene	ND		ng/l	10.0	5.00
Benzo(k)fluoranthene	ND		ng/l	10.0	5.00
Benzo(a)pyrene	ND		ng/l	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.0	5.00
Dibenz(a,h)anthracene	ND		ng/l	10.0	5.00
Benzo(ghi)perylene	ND		ng/l	10.0	5.00
Cl2-BZ#8	ND		ng/l	1.00	0.500
Cl3-BZ#18	ND		ng/l	1.00	0.500
Cl3-BZ#28	ND		ng/l	1.00	0.500
Cl4-BZ#44	ND		ng/l	1.00	0.500
Cl4-BZ#49	ND		ng/l	1.00	0.500
Cl4-BZ#52	ND		ng/l	1.00	0.500
Cl4-BZ#66	ND		ng/l	1.00	0.500
Cl5-BZ#87	ND		ng/l	1.00	0.500
Cl5-BZ#101	ND		ng/l	1.00	0.500
Cl5-BZ#105	ND		ng/l	1.00	0.500
Cl5-BZ#118	ND		ng/l	1.00	0.500
Cl6-BZ#128	ND		ng/l	1.00	0.500
Cl6-BZ#138	ND		ng/l	1.00	0.500



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/16/17 17:17

Extraction Date: 08/15/17 15:15

Analyst: GP

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 10 Batch: WG1032132-1					
Cl6-BZ#153	ND		ng/l	1.00	0.500
Cl7-BZ#170	ND		ng/l	1.00	0.500
Cl7-BZ#180	ND		ng/l	1.00	0.500
Cl7-BZ#183	ND		ng/l	1.00	0.500
Cl7-BZ#184	ND		ng/l	1.00	0.500
Cl7-BZ#187	ND		ng/l	1.00	0.500
Cl8-BZ#195	ND		ng/l	1.00	0.500
Cl9-BZ#206	ND		ng/l	1.00	0.500
Cl10-BZ#209	ND		ng/l	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	84		30-150
Benzo(b)fluoranthene-d12	84		30-150
DBOB	78		30-150
BZ 198	79		30-150



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-09 Batch: WG1031095-2 WG1031095-3								
Naphthalene	64		71		50-120	10		30
Acenaphthylene	66		65		50-120	2		30
Acenaphthene	67		66		50-120	2		30
Fluorene	68		65		50-120	5		30
Phenanthrene	66		69		50-120	4		30
Anthracene	68		70		50-120	3		30
Fluoranthene	71		74		50-120	4		30
Pyrene	71		73		50-120	3		30
Benz(a)anthracene	74		79		50-120	7		30
Chrysene	74		75		50-120	1		30
Benzo(b)fluoranthene	79		86		50-120	8		30
Benzo(k)fluoranthene	77		74		50-120	4		30
Benzo(a)pyrene	75		77		50-120	3		30
Indeno(1,2,3-cd)Pyrene	70		75		50-120	7		30
Dibenz(a,h)anthracene	73		75		50-120	3		30
Benzo(ghi)perylene	76		79		50-120	4		30
Cl2-BZ#8	72		73		50-120	1		30
Cl3-BZ#18	69		70		50-120	1		30
Cl3-BZ#28	70		72		50-120	3		30
Cl4-BZ#44	73		76		50-120	4		30
Cl4-BZ#49	72		75		50-120	4		30
Cl4-BZ#52	71		72		50-120	1		30
Cl4-BZ#66	73		75		50-120	3		30

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-09 Batch: WG1031095-2 WG1031095-3								
Cl5-BZ#87	72		75		50-120	4		30
Cl5-BZ#101	69		72		50-120	4		30
Cl5-BZ#105	74		75		50-120	1		30
Cl5-BZ#118	74		76		50-120	3		30
Cl6-BZ#128	72		75		50-120	4		30
Cl6-BZ#138	73		75		50-120	3		30
Cl6-BZ#153	73		77		50-120	5		30
Cl7-BZ#170	69		72		50-120	4		30
Cl7-BZ#180	70		72		50-120	3		30
Cl7-BZ#183	69		71		50-120	3		30
Cl7-BZ#184	69		72		50-120	4		30
Cl7-BZ#187	68		72		50-120	6		30
Cl8-BZ#195	69		73		50-120	6		30
Cl9-BZ#206	68		72		50-120	6		30
Cl10-BZ#209	73		75		50-120	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	63		65		30-150
Pyrene-d10	76		75		30-150
Benzo(b)fluoranthene-d12	80		79		30-150
DBOB	67		68		30-150
BZ 198	70		71		30-150

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 10 Batch: WG1032132-2 WG1032132-3								
Naphthalene	85		82		50-120	4		30
Acenaphthylene	83		80		50-120	4		30
Acenaphthene	81		79		50-120	3		30
Fluorene	82		80		50-120	2		30
Phenanthrene	80		79		50-120	1		30
Anthracene	81		79		50-120	3		30
Fluoranthene	83		84		50-120	1		30
Pyrene	82		84		50-120	2		30
Benz(a)anthracene	89		91		50-120	2		30
Chrysene	85		88		50-120	3		30
Benzo(b)fluoranthene	93		94		50-120	1		30
Benzo(k)fluoranthene	86		88		50-120	2		30
Benzo(a)pyrene	89		91		50-120	2		30
Indeno(1,2,3-cd)Pyrene	84		105		50-120	22		30
Dibenz(a,h)anthracene	86		87		50-120	1		30
Benzo(ghi)perylene	89		91		50-120	2		30
Cl2-BZ#8	83		83		50-120	0		30
Cl3-BZ#18	80		80		50-120	0		30
Cl3-BZ#28	80		80		50-120	0		30
Cl4-BZ#44	84		85		50-120	1		30
Cl4-BZ#49	83		83		50-120	0		30
Cl4-BZ#52	81		82		50-120	1		30
Cl4-BZ#66	83		86		50-120	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 10 Batch: WG1032132-2 WG1032132-3								
Cl5-BZ#87	81		83		50-120	2		30
Cl5-BZ#101	79		82		50-120	4		30
Cl5-BZ#105	81		85		50-120	5		30
Cl5-BZ#118	83		86		50-120	4		30
Cl6-BZ#128	80		84		50-120	5		30
Cl6-BZ#138	81		84		50-120	4		30
Cl6-BZ#153	81		85		50-120	5		30
Cl7-BZ#170	76		80		50-120	5		30
Cl7-BZ#180	78		82		50-120	5		30
Cl7-BZ#183	76		80		50-120	5		30
Cl7-BZ#184	77		81		50-120	5		30
Cl7-BZ#187	77		80		50-120	4		30
Cl8-BZ#195	77		80		50-120	4		30
Cl9-BZ#206	74		77		50-120	4		30
Cl10-BZ#209	80		84		50-120	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	77		74		30-150
Pyrene-d10	81		81		30-150
Benzo(b)fluoranthene-d12	82		84		30-150
DBOB	75		75		30-150
BZ 198	78		88		30-150

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1031095-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	60		40-140
Fluoranthene	60		40-140
Pyrene	54		40-140
Benz(a)anthracene	65		40-140
Chrysene	61		40-140
Benzo(b)fluoranthene	70		40-140
Benzo(k)fluoranthene	76		40-140
Benzo(a)pyrene	42		40-140
Indeno(1,2,3-cd)Pyrene	54		40-140
Dibenz(a,h)anthracene	115		40-140
Benzo(ghi)perylene	52		40-140
Cl2-BZ#8	61		40-140
Cl3-BZ#18	100		40-140
Cl3-BZ#28	44		40-140
Cl4-BZ#44	98		40-140
Cl4-BZ#49	62		40-140
Cl4-BZ#52	55		40-140
Cl4-BZ#66	50		40-140
Cl5-BZ#87	51		40-140
Cl5-BZ#101	62		40-140
Cl5-BZ#105	66		40-140
Cl5-BZ#118	68		40-140
Cl6-BZ#128	100		40-140
Cl6-BZ#138	77		40-140
Cl6-BZ#153	52		40-140
Cl7-BZ#170	58		40-140
Cl7-BZ#180	58		40-140
Cl7-BZ#183	56		40-140
Cl7-BZ#187	55		40-140
Cl9-BZ#206	67		40-140
Cl10-BZ#209	86		40-140
2-Methylnaphthalene-d10 (Surrogate)	68		30-150
Pyrene-d10 (Surrogate)	76		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	71		30-150
DBOB (Surrogate)	74		30-150
BZ 198 (Surrogate)	66		30-150



PESTICIDES

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-01 D
Client ID: NHH-U-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 05:21
Analyst: DP
Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.79	2.79	2	A
gamma-BHC	ND		ug/kg	1.40	1.40	2	A
Heptachlor	ND		ug/kg	1.40	1.40	2	A
Aldrin	ND		ug/kg	1.40	1.40	2	A
Heptachlor epoxide	ND		ug/kg	2.79	2.79	2	B
Oxychlordane	ND		ug/kg	2.79	2.79	2	B
trans-Chlordane	9.10	P	ug/kg	1.40	1.40	2	A
Endosulfan I	ND		ug/kg	1.40	1.40	2	A
cis-Chlordane	1.59		ug/kg	1.40	1.40	2	B
trans-Nonachlor	1.56		ug/kg	1.40	1.40	2	B
4,4'-DDE	5.79	P	ug/kg	1.40	1.40	2	B
Dieldrin	ND		ug/kg	1.40	1.40	2	A
Endrin	ND		ug/kg	1.40	1.40	2	A
Endosulfan II	1.64	IP	ug/kg	1.40	1.40	2	B
4,4'-DDD	ND		ug/kg	1.40	1.40	2	A
cis-Nonachlor	ND		ug/kg	1.40	1.40	2	A
4,4'-DDT	1.80	IP	ug/kg	1.40	1.40	2	A
Methoxychlor	ND		ug/kg	14.0	14.0	2	A
Toxaphene	ND		ug/kg	70.1	70.1	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	68		30-150	A
DBOB	52		30-150	B
BZ 198	76		30-150	B



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-02 D
Client ID: NHH-U-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 05:55
Analyst: DP
Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.35	2.35	2	A
gamma-BHC	ND		ug/kg	1.17	1.17	2	A
Heptachlor	ND		ug/kg	1.17	1.17	2	A
Aldrin	ND		ug/kg	1.17	1.17	2	A
Heptachlor epoxide	ND		ug/kg	2.35	2.35	2	B
Oxychlordane	ND		ug/kg	2.35	2.35	2	B
trans-Chlordane	103	P	ug/kg	1.17	1.17	2	A
Endosulfan I	ND		ug/kg	1.17	1.17	2	A
cis-Chlordane	2.41		ug/kg	1.17	1.17	2	A
trans-Nonachlor	5.80		ug/kg	1.17	1.17	2	A
4,4'-DDE	18.2		ug/kg	1.17	1.17	2	A
Dieldrin	8.56	IP	ug/kg	1.17	1.17	2	A
Endrin	ND		ug/kg	1.17	1.17	2	A
Endosulfan II	11.0	IP	ug/kg	1.17	1.17	2	B
4,4'-DDD	8.15	P	ug/kg	1.17	1.17	2	A
cis-Nonachlor	ND		ug/kg	1.17	1.17	2	A
4,4'-DDT	10.9	IP	ug/kg	1.17	1.17	2	A
Methoxychlor	ND		ug/kg	11.7	11.7	2	A
Toxaphene	ND		ug/kg	58.9	58.9	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		30-150	A
BZ 198	71		30-150	A
DBOB	42		30-150	B
BZ 198	72		30-150	B

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-03 D
 Client ID: NHH-P-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/29/17 06:29
 Analyst: DP
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.23	2.23	2	A
gamma-BHC	ND		ug/kg	1.11	1.11	2	A
Heptachlor	ND		ug/kg	1.11	1.11	2	A
Aldrin	ND		ug/kg	1.11	1.11	2	A
Heptachlor epoxide	ND		ug/kg	2.23	2.23	2	B
Oxychlordane	ND		ug/kg	2.23	2.23	2	B
trans-Chlordane	ND		ug/kg	1.11	1.11	2	A
Endosulfan I	ND		ug/kg	1.11	1.11	2	A
cis-Chlordane	1.93		ug/kg	1.11	1.11	2	A
trans-Nonachlor	2.18		ug/kg	1.11	1.11	2	B
4,4'-DDE	5.62		ug/kg	1.11	1.11	2	A
Dieldrin	2.12	IP	ug/kg	1.11	1.11	2	A
Endrin	ND		ug/kg	1.11	1.11	2	A
Endosulfan II	3.73	IP	ug/kg	1.11	1.11	2	B
4,4'-DDD	1.80		ug/kg	1.11	1.11	2	A
cis-Nonachlor	ND		ug/kg	1.11	1.11	2	A
4,4'-DDT	4.15	IP	ug/kg	1.11	1.11	2	A
Methoxychlor	ND		ug/kg	11.1	11.1	2	A
Toxaphene	ND		ug/kg	55.9	55.9	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	73		30-150	A
BZ 198	94		30-150	A
DBOB	61		30-150	B
BZ 198	99		30-150	B



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-04 D
 Client ID: NHH-P-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 12:19
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/29/17 07:03
 Analyst: DP
 Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.19	2.19	2	A
gamma-BHC	ND		ug/kg	1.10	1.10	2	A
Heptachlor	ND		ug/kg	1.10	1.10	2	A
Aldrin	ND		ug/kg	1.10	1.10	2	A
Heptachlor epoxide	ND		ug/kg	2.19	2.19	2	B
Oxychlordane	ND		ug/kg	2.19	2.19	2	B
trans-Chlordane	15.0	P	ug/kg	1.10	1.10	2	A
Endosulfan I	ND		ug/kg	1.10	1.10	2	A
cis-Chlordane	1.30		ug/kg	1.10	1.10	2	A
trans-Nonachlor	1.98		ug/kg	1.10	1.10	2	B
4,4'-DDE	5.32		ug/kg	1.10	1.10	2	A
Dieldrin	2.05	IP	ug/kg	1.10	1.10	2	A
Endrin	ND		ug/kg	1.10	1.10	2	A
Endosulfan II	2.77	IP	ug/kg	1.10	1.10	2	B
4,4'-DDD	1.74		ug/kg	1.10	1.10	2	A
cis-Nonachlor	ND		ug/kg	1.10	1.10	2	A
4,4'-DDT	2.98	IP	ug/kg	1.10	1.10	2	A
Methoxychlor	ND		ug/kg	11.0	11.0	2	A
Toxaphene	ND		ug/kg	55.0	55.0	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	77		30-150	A
DBOB	51		30-150	B
BZ 198	96		30-150	B



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-05 D
Client ID: NHH-Q-TOP
Sample Location: NEW HAVEN, CT

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 07:37
Analyst: DP
Percent Solids: 36%

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.71	2.71	2	A
gamma-BHC	ND		ug/kg	1.36	1.36	2	A
Heptachlor	ND		ug/kg	1.36	1.36	2	A
Aldrin	ND		ug/kg	1.36	1.36	2	A
Heptachlor epoxide	ND		ug/kg	2.71	2.71	2	B
Oxychlordane	ND		ug/kg	2.71	2.71	2	B
trans-Chlordane	ND		ug/kg	1.36	1.36	2	A
Endosulfan I	ND		ug/kg	1.36	1.36	2	A
cis-Chlordane	1.80		ug/kg	1.36	1.36	2	A
trans-Nonachlor	1.55		ug/kg	1.36	1.36	2	A
4,4'-DDE	3.79		ug/kg	1.36	1.36	2	A
Dieldrin	1.38	IP	ug/kg	1.36	1.36	2	A
Endrin	ND		ug/kg	1.36	1.36	2	A
Endosulfan II	2.21	I	ug/kg	1.36	1.36	2	B
4,4'-DDD	1.39		ug/kg	1.36	1.36	2	B
cis-Nonachlor	ND		ug/kg	1.36	1.36	2	A
4,4'-DDT	2.03	IP	ug/kg	1.36	1.36	2	A
Methoxychlor	ND		ug/kg	13.6	13.6	2	A
Toxaphene	ND		ug/kg	68.0	68.0	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	71		30-150	A
BZ 198	79		30-150	A
DBOB	57		30-150	B
BZ 198	95		30-150	B

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-06 D
 Client ID: NHH-Q-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 14:27
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/29/17 08:11
 Analyst: DP
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.26	2.26	2	A
gamma-BHC	ND		ug/kg	1.13	1.13	2	A
Heptachlor	ND		ug/kg	1.13	1.13	2	A
Aldrin	ND		ug/kg	1.13	1.13	2	A
Heptachlor epoxide	ND		ug/kg	2.26	2.26	2	B
Oxychlordane	ND		ug/kg	2.26	2.26	2	B
trans-Chlordane	18.3	P	ug/kg	1.13	1.13	2	A
Endosulfan I	ND		ug/kg	1.13	1.13	2	A
cis-Chlordane	2.31		ug/kg	1.13	1.13	2	A
trans-Nonachlor	5.15	P	ug/kg	1.13	1.13	2	B
4,4'-DDE	21.5		ug/kg	1.13	1.13	2	A
Dieldrin	8.30	IP	ug/kg	1.13	1.13	2	A
Endrin	ND		ug/kg	1.13	1.13	2	A
Endosulfan II	2.33	IP	ug/kg	1.13	1.13	2	B
4,4'-DDD	9.39	P	ug/kg	1.13	1.13	2	A
cis-Nonachlor	ND		ug/kg	1.13	1.13	2	A
4,4'-DDT	4.12	IP	ug/kg	1.13	1.13	2	A
Methoxychlor	ND		ug/kg	11.3	11.3	2	A
Toxaphene	ND		ug/kg	56.7	56.7	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		30-150	A
BZ 198	70		30-150	A
DBOB	43		30-150	B
BZ 198	77		30-150	B

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-07 D
Client ID: NHH-W-TOP
Sample Location: NEW HAVEN, CT

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 08:45
Analyst: DP
Percent Solids: 46%

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.16	2.16	2	A
gamma-BHC	ND		ug/kg	1.08	1.08	2	A
Heptachlor	ND		ug/kg	1.08	1.08	2	A
Aldrin	ND		ug/kg	1.08	1.08	2	A
Heptachlor epoxide	ND		ug/kg	2.16	2.16	2	B
Oxychlordane	ND		ug/kg	2.16	2.16	2	B
trans-Chlordane	ND		ug/kg	1.08	1.08	2	A
Endosulfan I	ND		ug/kg	1.08	1.08	2	A
cis-Chlordane	1.60		ug/kg	1.08	1.08	2	A
trans-Nonachlor	2.57		ug/kg	1.08	1.08	2	A
4,4'-DDE	5.43		ug/kg	1.08	1.08	2	A
Dieldrin	2.06	IP	ug/kg	1.08	1.08	2	A
Endrin	ND		ug/kg	1.08	1.08	2	A
Endosulfan II	3.59	IP	ug/kg	1.08	1.08	2	B
4,4'-DDD	1.64	I	ug/kg	1.08	1.08	2	B
cis-Nonachlor	ND		ug/kg	1.08	1.08	2	A
4,4'-DDT	4.65	IP	ug/kg	1.08	1.08	2	A
Methoxychlor	ND		ug/kg	10.8	10.8	2	A
Toxaphene	ND		ug/kg	54.1	54.1	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	76		30-150	A
DBOB	53		30-150	B
BZ 198	77		30-150	B



Project Name: USACE-NHH FNP**Lab Number:** L1727788**Project Number:** 60543021**Report Date:** 09/01/17**SAMPLE RESULTS**

Lab ID: L1727788-08 D
 Client ID: NHH-V-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Matrix: Sediment
 Analytical Method: 1,8081B
 Analytical Date: 08/29/17 09:19
 Analyst: DP
 Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.29	2.29	2	A
gamma-BHC	ND		ug/kg	1.14	1.14	2	A
Heptachlor	ND		ug/kg	1.14	1.14	2	A
Aldrin	ND		ug/kg	1.14	1.14	2	A
Heptachlor epoxide	ND		ug/kg	2.29	2.29	2	B
Oxychlordane	ND		ug/kg	2.29	2.29	2	B
trans-Chlordane	77.9	P	ug/kg	1.14	1.14	2	A
Endosulfan I	ND		ug/kg	1.14	1.14	2	A
cis-Chlordane	2.41		ug/kg	1.14	1.14	2	A
trans-Nonachlor	5.15	P	ug/kg	1.14	1.14	2	A
4,4'-DDE	4.80		ug/kg	1.14	1.14	2	A
Dieldrin	1.83	IP	ug/kg	1.14	1.14	2	A
Endrin	ND		ug/kg	1.14	1.14	2	A
Endosulfan II	6.92	IP	ug/kg	1.14	1.14	2	B
4,4'-DDD	2.25		ug/kg	1.14	1.14	2	A
cis-Nonachlor	ND		ug/kg	1.14	1.14	2	A
4,4'-DDT	9.17	P	ug/kg	1.14	1.14	2	A
Methoxychlor	ND		ug/kg	11.4	11.4	2	A
Toxaphene	ND		ug/kg	57.5	57.5	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	84		30-150	A
DBOB	60		30-150	B
BZ 198	86		30-150	B

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-09 D
Client ID: NHH-V-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/11/17 16:34
Cleanup Method: EPA 3630
Cleanup Date: 08/14/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/29/17 09:53
Analyst: DP
Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	2.38	2.38	2	A
gamma-BHC	ND		ug/kg	1.19	1.19	2	A
Heptachlor	ND		ug/kg	1.19	1.19	2	A
Aldrin	ND		ug/kg	1.19	1.19	2	A
Heptachlor epoxide	ND		ug/kg	2.38	2.38	2	B
Oxychlordane	ND		ug/kg	2.38	2.38	2	B
trans-Chlordane	114	P	ug/kg	1.19	1.19	2	A
Endosulfan I	ND		ug/kg	1.19	1.19	2	A
cis-Chlordane	4.12		ug/kg	1.19	1.19	2	A
trans-Nonachlor	7.99	P	ug/kg	1.19	1.19	2	A
4,4'-DDE	14.7		ug/kg	1.19	1.19	2	A
Dieldrin	6.02	IP	ug/kg	1.19	1.19	2	A
Endrin	ND		ug/kg	1.19	1.19	2	A
Endosulfan II	25.1	P	ug/kg	1.19	1.19	2	A
4,4'-DDD	5.27		ug/kg	1.19	1.19	2	A
cis-Nonachlor	ND		ug/kg	1.19	1.19	2	A
4,4'-DDT	14.5		ug/kg	1.19	1.19	2	A
Methoxychlor	ND		ug/kg	11.9	11.9	2	A
Toxaphene	ND		ug/kg	59.6	59.6	2	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	87		30-150	A
DBOB	53		30-150	B
BZ 198	74		30-150	B



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-10
 Client ID: NHH-EB-CORE-080917
 Sample Location: NEW HAVEN, CT

Date Collected: 08/09/17 17:45
 Date Received: 08/09/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/15/17 15:15

Matrix: Water
 Analytical Method: 1,8081B
 Analytical Date: 08/24/17 17:34
 Analyst: DP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	1	A
gamma-BHC	ND		ug/l	0.0005	0.0005	1	A
Heptachlor	ND		ug/l	0.0005	0.0005	1	A
Aldrin	ND		ug/l	0.0010	0.0010	1	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	1	B
Oxychlordane	ND		ug/l	0.0005	0.0005	1	B
trans-Chlordane	ND		ug/l	0.0005	0.0005	1	A
Endosulfan I	ND		ug/l	0.0005	0.0005	1	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	1	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	1	A
Dieldrin	ND		ug/l	0.0005	0.0005	1	A
Endrin	ND		ug/l	0.0005	0.0005	1	A
Endosulfan II	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	1	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	1	A
Methoxychlor	ND		ug/l	0.0050	0.0050	1	A
Toxaphene	ND		ug/l	0.0252	0.0252	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	54		30-150	A
BZ 198	156	Q	30-150	A
DBOB	49		30-150	B
BZ 198	62		30-150	B



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8081B
 Analytical Date: 08/28/17 17:26
 Analyst: DP

Extraction Method: EPA 3570
 Extraction Date: 08/11/17 16:34
 Cleanup Method: EPA 3630
 Cleanup Date: 08/14/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-09 Batch: WG1031089-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	46		30-150	A
BZ 198	60		30-150	A
DBOB	45		30-150	B
BZ 198	58		30-150	B



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/24/17 15:57
Analyst: DP

Extraction Method: EPA 3510C
Extraction Date: 08/15/17 15:15

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 10 Batch: WG1032133-1						
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	A
gamma-BHC	ND		ug/l	0.0005	0.0005	A
Heptachlor	ND		ug/l	0.0005	0.0005	A
Aldrin	ND		ug/l	0.0010	0.0010	A
trans-Chlordane	ND		ug/l	0.0005	0.0005	A
Endosulfan I	ND		ug/l	0.0005	0.0005	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	A
Dieldrin	ND		ug/l	0.0005	0.0005	A
Endrin	ND		ug/l	0.0005	0.0005	A
Endosulfan II	ND		ug/l	0.0005	0.0005	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	A
Methoxychlor	ND		ug/l	0.0050	0.0050	A
Toxaphene	ND		ug/l	0.0250	0.0250	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	B
Oxychlordane	ND		ug/l	0.0005	0.0005	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	76		30-150	A
DBOB	55		30-150	B
BZ 198	81		30-150	B



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-09 Batch: WG1031089-2 WG1031089-3									
Hexachlorobenzene	50		50		50-120	0		30	A
gamma-BHC	53		51		50-120	4		30	A
Heptachlor	53		53		50-120	0		30	A
Aldrin	51		52		50-120	2		30	A
trans-Chlordane	64		64		50-120	0		30	A
Endosulfan I	63		62		50-120	2		30	A
cis-Chlordane	60		60		50-120	0		30	A
trans-Nonachlor	60		61		50-120	2		30	A
4,4'-DDE	74		75		50-120	1		30	A
Dieldrin	72		70		50-120	3		30	A
Endrin	63		63		50-120	0		30	A
4,4'-DDD	79		79		50-120	0		30	A
cis-Nonachlor	65		66		50-120	2		30	A
4,4'-DDT	81		81		50-120	0		30	A
Methoxychlor	75		73		50-120	3		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	55		53		30-150	A
BZ 198	83		79		30-150	A
DBOB	54		44		30-150	B
BZ 198	84		78		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-09 Batch: WG1031089-2 WG1031089-3									
Heptachlor epoxide	63		64		50-120	2		30	B
Oxychlordane	59		60		50-120	2		30	B
Endosulfan II	69		65		50-120	6		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	55		53		30-150	A
BZ 198	83		79		30-150	A
DBOB	54		44		30-150	B
BZ 198	84		78		30-150	B

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 10 Batch: WG1032133-2 WG1032133-3									
Hexachlorobenzene	63		63		50-120	1		30	A
gamma-BHC	57		59		50-120	4		30	A
Heptachlor	63		66		50-120	4		30	A
Aldrin	64		66		50-120	4		30	A
trans-Chlordane	74		80		50-120	7		30	A
Endosulfan I	75		79		50-120	6		30	A
cis-Chlordane	71		77		50-120	7		30	A
trans-Nonachlor	71		77		50-120	8		30	A
4,4'-DDE	91		97		50-120	6		30	A
Dieldrin	87		92		50-120	5		30	A
Endrin	73		76		50-120	4		30	A
4,4'-DDD	89		91		50-120	2		30	A
cis-Nonachlor	75		79		50-120	6		30	A
4,4'-DDT	91		97		50-120	6		30	A
Methoxychlor	93		95		50-120	2		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	64		65		30-150	A
BZ 198	89		163	Q	30-150	A
DBOB	57		58		30-150	B
BZ 198	93		91		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 10 Batch: WG1032133-2 WG1032133-3									
Heptachlor epoxide	75		79		50-120	6		30	B
Oxychlordane	64		70		50-120	9		30	B
Endosulfan II	86		89		50-120	3		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	64		65		30-150	A
BZ 198	89		163	Q	30-150	A
DBOB	57		58		30-150	B
BZ 198	93		91		30-150	B

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1031089-4

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	70		40-140
cis-Chlordane	79		40-140
trans-Nonachlor	220	Q	40-140
DBOB (Surrogate)	48		30-150
DBOB (Surrogate)	53		30-150
BZ 198 (Surrogate)	86		30-150
BZ 198 (Surrogate)	159	Q	30-150

METALS

Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-01

Date Collected: 08/09/17 09:05

Client ID: NHH-U-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	8.98		mg/kg	0.254	0.034	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Cadmium, Total	1.02		mg/kg	0.101	0.013	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Chromium, Total	69.8		mg/kg	1.01	0.237	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Copper, Total	118		mg/kg	1.01	0.098	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Lead, Total	64.8		mg/kg	0.304	0.074	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Mercury, Total	0.280		mg/kg	0.040	0.005	5	08/22/17 14:10	08/24/17 13:21	EPA 7474	1,7474	BV
Nickel, Total	26.5		mg/kg	0.507	0.135	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV
Zinc, Total	206		mg/kg	5.07	1.32	2	08/22/17 14:20	08/30/17 18:45	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-02

Date Collected: 08/09/17 09:05

Client ID: NHH-U-BOTTOM

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	12.5		mg/kg	0.188	0.025	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Cadmium, Total	6.05		mg/kg	0.075	0.010	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Chromium, Total	181		mg/kg	0.751	0.176	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Copper, Total	325		mg/kg	0.751	0.073	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Lead, Total	174		mg/kg	0.225	0.055	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Mercury, Total	1.04		mg/kg	0.028	0.004	5	08/22/17 14:10	08/24/17 13:24	EPA 7474	1,7474	BV
Nickel, Total	41.6		mg/kg	0.376	0.100	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV
Zinc, Total	490		mg/kg	3.76	0.977	2	08/22/17 14:20	08/30/17 18:49	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-03

Date Collected: 08/09/17 12:19

Client ID: NHH-P-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.4		mg/kg	0.201	0.027	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Cadmium, Total	2.37		mg/kg	0.080	0.011	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Chromium, Total	107		mg/kg	0.804	0.188	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Copper, Total	215		mg/kg	0.804	0.078	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Lead, Total	99.8		mg/kg	0.241	0.059	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Mercury, Total	0.608		mg/kg	0.023	0.003	5	08/22/17 14:10	08/24/17 13:26	EPA 7474	1,7474	BV
Nickel, Total	30.0		mg/kg	0.402	0.107	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV
Zinc, Total	275		mg/kg	4.02	1.04	2	08/22/17 14:20	08/30/17 19:10	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-04

Date Collected: 08/09/17 12:19

Client ID: NHH-P-BOTTOM

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.6		mg/kg	0.180	0.024	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Cadmium, Total	2.43		mg/kg	0.072	0.010	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Chromium, Total	108		mg/kg	0.721	0.169	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Copper, Total	199		mg/kg	0.721	0.070	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Lead, Total	102		mg/kg	0.216	0.053	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Mercury, Total	0.621		mg/kg	0.024	0.003	5	08/22/17 14:10	08/24/17 13:29	EPA 7474	1,7474	BV
Nickel, Total	29.7		mg/kg	0.360	0.096	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV
Zinc, Total	281		mg/kg	3.60	0.937	2	08/22/17 14:20	08/30/17 19:14	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-05

Date Collected: 08/09/17 14:27

Client ID: NHH-Q-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.77		mg/kg	0.216	0.029	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Cadmium, Total	1.05		mg/kg	0.087	0.011	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Chromium, Total	70.6		mg/kg	0.866	0.203	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Copper, Total	121		mg/kg	0.866	0.084	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Lead, Total	67.7		mg/kg	0.260	0.063	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Mercury, Total	0.282		mg/kg	0.036	0.005	5	08/22/17 14:10	08/24/17 13:36	EPA 7474	1,7474	BV
Nickel, Total	26.7		mg/kg	0.433	0.116	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV
Zinc, Total	211		mg/kg	4.33	1.12	2	08/22/17 14:20	08/30/17 19:18	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-06

Date Collected: 08/09/17 14:27

Client ID: NHH-Q-BOTTOM

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	14.5		mg/kg	0.189	0.025	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Cadmium, Total	6.71		mg/kg	0.076	0.010	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Chromium, Total	210		mg/kg	0.757	0.177	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Copper, Total	376		mg/kg	0.757	0.073	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Lead, Total	151		mg/kg	0.227	0.055	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Mercury, Total	1.29		mg/kg	0.036	0.005	5	08/22/17 14:10	08/24/17 13:39	EPA 7474	1,7474	BV
Nickel, Total	35.6		mg/kg	0.378	0.101	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV
Zinc, Total	588		mg/kg	3.78	0.984	2	08/22/17 14:20	08/30/17 19:22	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-07

Date Collected: 08/09/17 16:34

Client ID: NHH-W-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 46%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	7.14		mg/kg	0.172	0.023	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Cadmium, Total	1.84		mg/kg	0.069	0.009	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Chromium, Total	71.0		mg/kg	0.690	0.162	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Copper, Total	118		mg/kg	0.690	0.067	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Lead, Total	59.8		mg/kg	0.207	0.050	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Mercury, Total	0.437		mg/kg	0.022	0.003	5	08/22/17 14:10	08/24/17 13:41	EPA 7474	1,7474	BV
Nickel, Total	19.6		mg/kg	0.345	0.092	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV
Zinc, Total	183		mg/kg	3.45	0.898	2	08/22/17 14:20	08/30/17 19:26	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-08

Date Collected: 08/09/17 17:45

Client ID: NHH-V-TOP

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.7		mg/kg	0.188	0.025	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Cadmium, Total	2.68		mg/kg	0.075	0.010	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Chromium, Total	116		mg/kg	0.753	0.176	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Copper, Total	198		mg/kg	0.753	0.073	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Lead, Total	123		mg/kg	0.226	0.055	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Mercury, Total	0.432		mg/kg	0.035	0.005	5	08/22/17 14:10	08/24/17 13:44	EPA 7474	1,7474	BV
Nickel, Total	36.3		mg/kg	0.376	0.100	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV
Zinc, Total	288		mg/kg	3.76	0.978	2	08/22/17 14:20	08/30/17 19:30	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-09

Date Collected: 08/09/17 17:45

Client ID: NHH-V-BOTTOM

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 41%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	13.5		mg/kg	0.181	0.024	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Cadmium, Total	5.54		mg/kg	0.072	0.010	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Chromium, Total	178		mg/kg	0.723	0.169	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Copper, Total	289		mg/kg	0.723	0.070	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Lead, Total	188		mg/kg	0.217	0.053	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Mercury, Total	0.805		mg/kg	0.031	0.004	5	08/22/17 14:10	08/24/17 13:46	EPA 7474	1,7474	BV
Nickel, Total	47.3		mg/kg	0.362	0.097	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV
Zinc, Total	449		mg/kg	3.62	0.940	2	08/22/17 14:20	08/30/17 19:34	EPA 3050B	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-10

Date Collected: 08/09/17 17:45

Client ID: NHH-EB-CORE-080917

Date Received: 08/09/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Chromium, Total	0.00226		mg/l	0.00100	0.00017	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00005	0.00001	1	08/15/17 16:09	08/16/17 12:45	EPA 7474	1,7474	BV
Nickel, Total	0.02134		mg/l	0.00200	0.00055	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/15/17 12:00	08/23/17 14:01	EPA 3020A	1,6020A	AM



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 10 Batch: WG1032053-1										
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Chromium, Total	0.00054	J	mg/l	0.00100	0.00017	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Nickel, Total	0.00057	J	mg/l	0.00200	0.00055	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/15/17 12:00	08/23/17 10:54	1,6020A	AM

Prep Information

Digestion Method: EPA 3020A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 10 Batch: WG1032151-1										
Mercury, Total	ND		mg/l	0.00005	0.00001	1	08/15/17 16:09	08/16/17 12:33	1,7474	BV

Prep Information

Digestion Method: EPA 7474

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-09 Batch: WG1034116-1										
Arsenic, Total	ND		mg/kg	0.100	0.013	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Cadmium, Total	ND		mg/kg	0.040	0.005	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Chromium, Total	ND		mg/kg	0.400	0.094	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Copper, Total	ND		mg/kg	0.400	0.039	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Lead, Total	ND		mg/kg	0.120	0.029	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Nickel, Total	ND		mg/kg	0.200	0.053	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV
Zinc, Total	ND		mg/kg	2.00	0.520	2	08/22/17 14:20	08/29/17 15:41	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1727788

Project Number: 60543021

Report Date: 09/01/17

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-09 Batch: WG1034262-1									
Mercury, Total	ND	mg/kg	0.013	0.002	5	08/22/17 14:10	08/24/17 12:32	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1032053-2								
Arsenic, Total	106		-		80-120	-		20
Cadmium, Total	111		-		80-120	-		20
Chromium, Total	110		-		80-120	-		20
Copper, Total	108		-		80-120	-		20
Lead, Total	109		-		80-120	-		20
Nickel, Total	107		-		80-120	-		20
Zinc, Total	108		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1032151-2 SRM Lot Number: HPHGAF								
Mercury, Total	95		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-09 Batch: WG1034116-2 SRM Lot Number: D093-540								
Arsenic, Total	105		-		70-130	-		20
Cadmium, Total	99		-		83-117	-		20
Chromium, Total	101		-		80-120	-		20
Copper, Total	100		-		82-118	-		20
Lead, Total	106		-		82-117	-		20
Nickel, Total	100		-		83-117	-		20
Zinc, Total	97		-		83-117	-		20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-09 Batch: WG1034262-2 SRM Lot Number: D093-540					
Mercury, Total	80	-	72-128	-	20

INORGANICS & MISCELLANEOUS

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-01
Client ID: NHH-U-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.87		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.84		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	35.6		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	64.4		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-02
Client ID: NHH-U-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 09:05
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.65		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.42		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	41.1		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	58.9		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-03
Client ID: NHH-P-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.82		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.28		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	42.7		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	57.3		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-04
Client ID: NHH-P-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 12:19
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.94		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.90		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	42.2		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	57.8		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-05
Client ID: NHH-Q-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.80		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.68		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	36.0		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	64.0		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-06
Client ID: NHH-Q-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 14:27
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.78		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.77		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	42.6		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	57.4		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-07
Client ID: NHH-W-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 16:34
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.76		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.72		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	46.1		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	53.9		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-08
Client ID: NHH-V-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.03		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.09		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	40.8		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	59.2		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1727788
Report Date: 09/01/17

SAMPLE RESULTS

Lab ID: L1727788-09
Client ID: NHH-V-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.94		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	3.60		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	41.4		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO
Moisture	58.6		%	0.100	0.100	1	-	08/11/17 13:26	121,2540G	KO



Project Name: USACE-NHH FNP**Project Number:** 60543021**Lab Number:** L1727788**Report Date:** 09/01/17**SAMPLE RESULTS**

Lab ID: L1727788-10
Client ID: NHH-EB-CORE-080917
Sample Location: NEW HAVEN, CT
Matrix: Water

Date Collected: 08/09/17 17:45
Date Received: 08/09/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/10/17 14:50	08/10/17 15:03	77,7196A	ML



Project Name: USACE-NHH FNP
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Lab Number: L1727788
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Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab for sample(s): 10 Batch: WG1030822-1										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/10/17 14:50	08/10/17 15:00	77,7196A	ML
Total Organic Carbon - Mansfield Lab for sample(s): 01-09 Batch: WG1037558-1										
Total Organic Carbon (Rep1)	0.011		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.010		%	0.010	0.010	1	-	08/31/17 00:00	1,9060A	SP



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1727788

Report Date: 09/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
CT RCP General Chemistry - Westborough Lab Associated sample(s): 10 Batch: WG1030822-2 WG1030822-3								
Chromium, Hexavalent	94		99		80-120	5		20
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-09 Batch: WG1037558-2								
Total Organic Carbon (Rep1)	83		-		75-125	-		25
Total Organic Carbon (Rep2)	104		-		75-125	-		25

Matrix Spike Analysis Batch Quality Control

Project Name: USACE-NHH FNP

Lab Number: L1727788

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Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1037558-4 QC Sample: L1727788-03 Client ID: NHH-P-TOP												
Total Organic Carbon (Rep1)	2.82	0.89	3.82	112		-	-		75-125	-		25
Total Organic Carbon (Rep2)	3.28	1.01	3.97	68	Q	-	-		75-125	-		25

Lab Duplicate Analysis
Batch Quality Control**Project Name:** USACE-NHH FNP**Project Number:** 60543021**Lab Number:** L1727788**Report Date:** 09/01/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1037558-3 QC Sample: L1727788-03 Client ID: NHH-P-TOP						
Total Organic Carbon (Rep1)	2.82	3.33	%	17		25
Total Organic Carbon (Rep2)	3.28	2.94	%	11		25

Project Name: USACE-NHH FNP
Project Number: 60543021

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Sample Receipt and Container Information

Were project specific reporting limits specified?

NO

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727788-01A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-RIM-FORMS(),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-02A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-03A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-04A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE-NHH FNP
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727788-05A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-06A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-07A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-08A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-09A	Glass 500ml/16oz unpreserved	A	NA		5.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1727788-10A	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		A2-PB-6020T(180),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-CU-6020T(180)
L1727788-10B	Plastic 250ml unpreserved	A	7	7	5.0	Y	Absent		CT-HEXCR-7196(1)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1727788-10C	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7)
L1727788-10D	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7)
L1727788-10E	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PAH/PCBCONG(7)
L1727788-10F	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PAH/PCBCONG(7)

Container Comments

L1727788-04A container rec'd 8/10/17

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 77 Connecticut DEP Quality Assurance and Quality Control Requirements for SW-846 Methods. CTDEP Reasonable Confidence Protocols (RCPs). Version 1.0, July 2005.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	Yes
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No - see case narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see case narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	Yes
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – see case narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV opening for all samples: Column II: hexachlorobenzene @30%, gamma-BHC @ 16%, delta-BHC @ 20%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	Trans-Nonachlor @ 220%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	SRM: BZ198 @ 159%	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1727562-07D: C14-BZ#52 @ 44%, C17-BZ#170 @ 34%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly			Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	yes		In Data Package
Method Blank	No target analytes > RL	yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	no	cadmium (25%), chromium (36%), copper (25%), lead	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	YES		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	YES		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

4727788

Page 1 of 1

Client/Project Name: USACE - NHA FNP			Project Location: NEW HAVEN, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number: 60543021			Field Logbook No.:			GRASS - SIEVE METALS - 6020A/7474-7473 PCBs - 8082/8270 SIM PESTICIDES - 8081 B PAHS - 8270 D SIM TOC - 9060										Matrix Codes:				
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:													Send Results/Report to: MARY O'CONNELL KOZIK		TAT: GAIN 52E - 24H CHEMISTRY - STD		DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water
Signature: 																				
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHH - U - TOP	8/9/17	0905	X		807/1607	SD	40C	1/4	X	X	X	X	X	X			0 - 5'10"			
NHH - U - BOTTOM		0905	X						X	X	X	X	X	X			5'10" - 30"			
NHH - P - TOP		1219							X	X	X	X	X	X			0 - 5'9"			
NHH - P - BOTTOM		1219							X	X	X	X	X	X			5'9" - 12'4"			
NHH - Q - TOP		1427							X	X	X	X	X	X			0 - 5'3"			
NHH - Q - BOTTOM		1427							X	X	X	X	X	X			5'3" - 29.5"			
NHH - W - TOP		1634							X	X	X	X	X	X			0 - 5'6"			
NHH - W - BOTTOM		1634			807				X								5'6" - 8'2"			
NHH - V - TOP		1745			807/1607				X	X	X	X	X	X			0 - 4'9"			
NHH - V - BOTTOM		1745							X	X	X	X	X	X			4'9" - 8'7"			

Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/9/17 Time: 1900		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 3 WALKER DRIVE WESTBOROUGH, MA	
Signature:		Date: 8/9/17 Time: 5109		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17 Time: 2129		Temp blank: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Courier <input type="checkbox"/> Other	
Signature:		Time:		Signature:		Time:			

AECOM

CHAIN OF CUSTODY RECORD

L1727768

Page 1 of 1

Client/Project Name: USAEC - NHH FND		Project Location: NEW HAVEN, CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°						
Project Number: 60543021		Field Logbook No.:		<div style="display: flex; justify-content: space-around;"> <div>METALS</div> <div>PAHS / PCB</div> <div>PESTICIDES</div> <div>CR6</div> </div>										Matrix Codes:								
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM		Chain of Custody Tape Nos.:												DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product						
Signature: 		Send Results/Report to: MARY DONNELL KOZIK		TAT: STD												Lab I.D.		Remarks				
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered														
10 NHH-EB-CORE-080917	8/1/17			X		W	4C-3	1/4	X	X	X	X	X	X	X	X	X	4x 1L AMBER 1x 250 mL 1x 250 mL w/ HNO3				
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY / AECOM		Date: 8/6/17		Signature:		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17		Time: 1858		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKER DRIVE WESTBOROUGH, MA ATTN: LIZ POZIA										
Signature:		Time: 1900		Signature:		Time: 2129																
Relinquished by: (Print Name)/(Affiliation) 		Date: 8/9/17		Signature:		Received by: (Print Name)/(Affiliation) 		Date: 8/9/17		Time: 2129												
Signature:		Time: 2129		Signature:		Time: 2129																
Relinquished by: (Print Name)/(Affiliation)		Date:		Signature:		Received by: (Print Name)/(Affiliation)		Date:		Time:		Sample Shipped Via: UPS FedEx Courier Other										
Signature:		Time:		Signature:		Time:		Temp blank Yes No														



Serial No. **NO 0157**



ANALYTICAL REPORT

Lab Number:	L1728049
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	09/08/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728049-01	NHH-R-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17
L1728049-02	NHH-R-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 08:32	08/10/17
L1728049-03	NHH-S-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 09:55	08/10/17
L1728049-04	NHH-J	SEDIMENT	NEW HAVEN, CT	08/10/17 11:41	08/10/17
L1728049-05	NHH-L	SEDIMENT	NEW HAVEN, CT	08/10/17 13:00	08/10/17
L1728049-06	NHH-K-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:09	08/10/17
L1728049-07	NHH-H-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728049-08	NHH-H-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728049-09	NHH-H-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 14:58	08/10/17
L1728049-10	NHH-I-TOP	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17
L1728049-11	NHH-I-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/10/17 15:48	08/10/17
L1728049-12	NHH-G-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1728049-13	NHH-G-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 08:37	08/11/17
L1728049-14	NHH-C-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1728049-15	NHH-C-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 10:33	08/11/17
L1728049-16	NHH-B	SEDIMENT	NEW HAVEN, CT	08/11/17 11:57	08/11/17
L1728049-17	NHH-A-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 13:40	08/11/17
L1728049-18	NHH-D-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1728049-19	NHH-D-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 15:07	08/11/17
L1728049-20	NHH-F-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1728049-21	NHH-F-REP-TOP	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17
L1728049-22	NHH-F-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/11/17 16:50	08/11/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

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Project Number: 60543021

Lab Number: L1728049
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Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics

The WG1033334-4 SRM recoveries, associated with L1728049-01, -02, -03, -04, -06, -07, -08, -09, -10 and -16, are outside the acceptance criteria for Cl3-BZ#28 (39%).

The WG1033339-4 SRM recovery is outside the acceptance criteria for Cl10-BZ#209 (232%).

The WG1033334-6/-7 MS/MSD recoveries, performed on L1728049-16, are outside the acceptance criteria for Naphthalene (47%/47%), Acenaphthylene (48%/48%), Acenaphthene (46%/46%), Fluorene (48%/49%) and Phenanthrene (46%/48%).

The WG1037293-6 MS recovery performed on L1728049-05, is outside the acceptance criteria for one compound; however, the associated LCS/LCSD recoveries are within overall method allowances. The results of the native sample are considered to have a potentially high bias for Benz(a)anthracene (121%).

The WG1033339-7 MSD recovery, performed on L1728049-22, is outside the acceptance criteria for two compounds; however, the associated LCS/LCSD recoveries are within overall method allowances. The results of the native sample are considered to have a potentially low bias for Fluoranthene (41%) and Pyrene (49%).

The WG1037293-5 Laboratory Duplicate RPD for Acenaphthylene (35%), performed on L1728049-05, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1033339-5 Laboratory Duplicate RPD for Acenaphthylene (32%), Cl5-BZ#101 (35%) and Cl7-BZ#187 (32%), performed on L1728049-22, is outside the acceptance criteria. The elevated RPD has been

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attributed to the non-homogeneous nature of the native sample.

Pesticides

L1728049-05 was frozen upon receipt to arrest sample holding time.

The WG1033330-4 SRM recovery for trans-Nonachlor (476%) and the surrogate BZ198 column B (205%), are above the acceptance criteria.

The WG1033336-4 SRM recovery for trans-Nonachlor (290%) and the surrogate BZ198 column B (179%), are above the acceptance criteria.

The WG1037294-4 SRM recovery for trans-Nonachlor (320%) and the surrogate BZ198 column B (179%), are above the acceptance criteria.

All recoveries and percent differences (%RPD) for LCS WG1033336-2 and LCSD WG1033336-3 are within SOP criteria (40-140% recovery and 50%RPD); therefore no further action was taken.

The WG1033336-5 MS recovery for Hexachlorobenzene (48%), performed on L1728049-22, is outside the acceptance criteria; however, the associated LCS/LCSD are within the overall method allowances.

Total Metals

The WG1032246-7 MS recovery, performed on L1728049-22, is outside the acceptance criteria for Chromium (201%). A post digestion spike was performed and was within acceptance criteria.

The WG1032246-7 MS recoveries, performed on L1728049-22, are outside the acceptance criteria for Zinc (129%). A post digestion spike was performed and yielded an unacceptable recovery for Zinc (129%). This has been attributed to sample matrix.

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Case Narrative (continued)

The WG1032246-7 MS recovery for Copper (239%), performed on L1728049-22, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1032246-7/-8 MS/MSD RPDs for Chromium (22%) and Copper (27%), performed on L1728049-22, are above the acceptance criteria.

The WG1034140-5 Laboratory Duplicate RPD for Mercury (29%), performed on L1728049-22, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Total Organic Carbon

L1728049-16: The Sample Replicate RPD is outside the acceptance criteria of 30%. A double-burn re-analysis was performed with confirming results. The results of the original analysis are reported. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1036606-1 Method Blank, associated with L1728049-03 through -22, has a concentration above the reporting limit. Since the associated sample concentrations are greater than 10x the blank concentration for this analyte, no corrective action is required.

The WG1036606-3 Laboratory Duplicate RPD for (Rep1 - 27%), performed on L1728049-16, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1036606-4/-5 MS/MSD recoveries (Rep1 - 32%/65%) and (Rep2 - 71% - MSD only), performed on L1728049-16, are outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria indicating the sample batch was in control, and all sample results were accepted. In addition, the RPDs (Rep1 - 32%) and (Rep2 - 32%), performed on L1728049-16, are outside the acceptance criteria of 30%. The elevated RPD has been attributed to the non-homogeneous nature of the

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native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 09/08/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-01
 Client ID: NHH-R-TOP
 Sample Location: NEW HAVEN, CT

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 13:35
 Analyst: JT
 Percent Solids: 37%

Date Collected: 08/10/17 08:32
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	52.6		ug/kg	12.8	6.40	1
Acenaphthylene	49.4		ug/kg	12.8	6.40	1
Acenaphthene	15.8		ug/kg	12.8	6.40	1
Fluorene	24.0		ug/kg	12.8	6.40	1
Phenanthrene	140		ug/kg	12.8	6.40	1
Anthracene	64.5		ug/kg	12.8	6.40	1
Fluoranthene	462		ug/kg	12.8	6.40	1
Pyrene	386		ug/kg	12.8	6.40	1
Benz(a)anthracene	200		ug/kg	12.8	6.40	1
Chrysene	263		ug/kg	12.8	6.40	1
Benzo(b)fluoranthene	287		ug/kg	12.8	6.40	1
Benzo(k)fluoranthene	182		ug/kg	12.8	6.40	1
Benzo(a)pyrene	256		ug/kg	12.8	6.40	1
Indeno(1,2,3-cd)Pyrene	215		ug/kg	12.8	6.40	1
Dibenz(a,h)anthracene	48.6		ug/kg	12.8	6.40	1
Benzo(ghi)perylene	226		ug/kg	12.8	6.40	1
Cl2-BZ#8	ND		ug/kg	1.28	0.640	1
Cl3-BZ#18	0.709	J	ug/kg	1.28	0.640	1
Cl3-BZ#28	1.04	J	ug/kg	1.28	0.640	1
Cl4-BZ#44	2.00		ug/kg	1.28	0.640	1
Cl4-BZ#49	1.38		ug/kg	1.28	0.640	1
Cl4-BZ#52	2.98		ug/kg	1.28	0.640	1
Cl4-BZ#66	2.10		ug/kg	1.28	0.640	1
Cl5-BZ#87	0.842	J	ug/kg	1.28	0.640	1
Cl5-BZ#101	3.43		ug/kg	1.28	0.640	1
Cl5-BZ#105	1.93		ug/kg	1.28	0.640	1
Cl5-BZ#118	3.00		ug/kg	1.28	0.640	1
Cl6-BZ#128	ND		ug/kg	1.28	0.640	1
Cl6-BZ#138	4.10		ug/kg	1.28	0.640	1
Cl6-BZ#153	3.14		ug/kg	1.28	0.640	1



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Lab Number: L1728049
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SAMPLE RESULTS

Lab ID: L1728049-01
Client ID: NHH-R-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.02	J	ug/kg	1.28	0.640	1
Cl7-BZ#180	2.09		ug/kg	1.28	0.640	1
Cl7-BZ#183	0.667	J	ug/kg	1.28	0.640	1
Cl7-BZ#184	ND		ug/kg	1.28	0.640	1
Cl7-BZ#187	1.61		ug/kg	1.28	0.640	1
Cl8-BZ#195	ND		ug/kg	1.28	0.640	1
Cl9-BZ#206	0.684	J	ug/kg	1.28	0.640	1
Cl10-BZ#209	ND		ug/kg	1.28	0.640	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	54		30-150
Pyrene-d10	59		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	76		30-150
BZ 198	71		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

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Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-02
 Client ID: NHH-R-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 08:32
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 14:07
 Analyst: JT
 Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	62.8		ug/kg	10.5	5.24	1
Acenaphthylene	55.6		ug/kg	10.5	5.24	1
Acenaphthene	17.3		ug/kg	10.5	5.24	1
Fluorene	28.2		ug/kg	10.5	5.24	1
Phenanthrene	146		ug/kg	10.5	5.24	1
Anthracene	76.3		ug/kg	10.5	5.24	1
Fluoranthene	468		ug/kg	10.5	5.24	1
Pyrene	413		ug/kg	10.5	5.24	1
Benz(a)anthracene	219		ug/kg	10.5	5.24	1
Chrysene	268		ug/kg	10.5	5.24	1
Benzo(b)fluoranthene	302		ug/kg	10.5	5.24	1
Benzo(k)fluoranthene	194		ug/kg	10.5	5.24	1
Benzo(a)pyrene	247		ug/kg	10.5	5.24	1
Indeno(1,2,3-cd)Pyrene	195		ug/kg	10.5	5.24	1
Dibenz(a,h)anthracene	47.8		ug/kg	10.5	5.24	1
Benzo(ghi)perylene	213		ug/kg	10.5	5.24	1
Cl2-BZ#8	0.582	J	ug/kg	1.05	0.524	1
Cl3-BZ#18	1.13		ug/kg	1.05	0.524	1
Cl3-BZ#28	1.70		ug/kg	1.05	0.524	1
Cl4-BZ#44	3.07		ug/kg	1.05	0.524	1
Cl4-BZ#49	2.68		ug/kg	1.05	0.524	1
Cl4-BZ#52	4.22		ug/kg	1.05	0.524	1
Cl4-BZ#66	2.68		ug/kg	1.05	0.524	1
Cl5-BZ#87	ND		ug/kg	1.05	0.524	1
Cl5-BZ#101	3.96		ug/kg	1.05	0.524	1
Cl5-BZ#105	5.87		ug/kg	1.05	0.524	1
Cl5-BZ#118	4.28		ug/kg	1.05	0.524	1
Cl6-BZ#128	0.862	J	ug/kg	1.05	0.524	1
Cl6-BZ#138	4.53		ug/kg	1.05	0.524	1
Cl6-BZ#153	4.49		ug/kg	1.05	0.524	1



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Lab Number: L1728049
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SAMPLE RESULTS

Lab ID: L1728049-02
Client ID: NHH-R-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.18		ug/kg	1.05	0.524	1
Cl7-BZ#180	2.78		ug/kg	1.05	0.524	1
Cl7-BZ#183	0.684	J	ug/kg	1.05	0.524	1
Cl7-BZ#184	ND		ug/kg	1.05	0.524	1
Cl7-BZ#187	2.11		ug/kg	1.05	0.524	1
Cl8-BZ#195	ND		ug/kg	1.05	0.524	1
Cl9-BZ#206	0.800	J	ug/kg	1.05	0.524	1
Cl10-BZ#209	0.627	J	ug/kg	1.05	0.524	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	46		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	63		30-150
BZ 198	65		30-150

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Lab Number: L1728049

Project Number: 60543021

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SAMPLE RESULTS

Lab ID: L1728049-03
 Client ID: NHH-S-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 09:55
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 14:39
 Analyst: JT
 Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	381		ug/kg	11.8	5.93	1
Acenaphthylene	79.4		ug/kg	11.8	5.93	1
Acenaphthene	40.8		ug/kg	11.8	5.93	1
Fluorene	77.9		ug/kg	11.8	5.93	1
Phenanthrene	326		ug/kg	11.8	5.93	1
Anthracene	91.6		ug/kg	11.8	5.93	1
Fluoranthene	835		ug/kg	11.8	5.93	1
Pyrene	706		ug/kg	11.8	5.93	1
Benz(a)anthracene	403		ug/kg	11.8	5.93	1
Chrysene	363		ug/kg	11.8	5.93	1
Benzo(b)fluoranthene	583		ug/kg	11.8	5.93	1
Benzo(k)fluoranthene	234		ug/kg	11.8	5.93	1
Benzo(a)pyrene	310		ug/kg	11.8	5.93	1
Indeno(1,2,3-cd)Pyrene	325		ug/kg	11.8	5.93	1
Dibenz(a,h)anthracene	70.4		ug/kg	11.8	5.93	1
Benzo(ghi)perylene	319		ug/kg	11.8	5.93	1
Cl2-BZ#8	2.60		ug/kg	1.18	0.593	1
Cl3-BZ#18	7.95		ug/kg	1.18	0.593	1
Cl3-BZ#28	5.83		ug/kg	1.18	0.593	1
Cl4-BZ#44	16.4		ug/kg	1.18	0.593	1
Cl4-BZ#49	9.02		ug/kg	1.18	0.593	1
Cl4-BZ#52	13.6		ug/kg	1.18	0.593	1
Cl4-BZ#66	9.84		ug/kg	1.18	0.593	1
Cl5-BZ#87	7.16		ug/kg	1.18	0.593	1
Cl5-BZ#101	22.6		ug/kg	1.18	0.593	1
Cl5-BZ#105	8.13		ug/kg	1.18	0.593	1
Cl5-BZ#118	14.7		ug/kg	1.18	0.593	1
Cl6-BZ#128	4.02		ug/kg	1.18	0.593	1
Cl6-BZ#138	20.2		ug/kg	1.18	0.593	1
Cl6-BZ#153	17.8		ug/kg	1.18	0.593	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-03
Client ID: NHH-S-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 09:55
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	6.32		ug/kg	1.18	0.593	1
Cl7-BZ#180	11.2		ug/kg	1.18	0.593	1
Cl7-BZ#183	2.54		ug/kg	1.18	0.593	1
Cl7-BZ#184	ND		ug/kg	1.18	0.593	1
Cl7-BZ#187	8.90		ug/kg	1.18	0.593	1
Cl8-BZ#195	1.13	J	ug/kg	1.18	0.593	1
Cl9-BZ#206	2.38		ug/kg	1.18	0.593	1
Cl10-BZ#209	1.24		ug/kg	1.18	0.593	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	59		30-150
Benzo(b)fluoranthene-d12	56		30-150
DBOB	67		30-150
BZ 198	74		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

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Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-04
 Client ID: NHH-J
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 11:41
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 15:12
 Analyst: JT
 Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	207		ug/kg	12.0	5.99	1
Acenaphthylene	81.2		ug/kg	12.0	5.99	1
Acenaphthene	18.2		ug/kg	12.0	5.99	1
Fluorene	37.5		ug/kg	12.0	5.99	1
Phenanthrene	204		ug/kg	12.0	5.99	1
Anthracene	92.9		ug/kg	12.0	5.99	1
Fluoranthene	537		ug/kg	12.0	5.99	1
Pyrene	527		ug/kg	12.0	5.99	1
Benz(a)anthracene	298		ug/kg	12.0	5.99	1
Chrysene	321		ug/kg	12.0	5.99	1
Benzo(b)fluoranthene	391		ug/kg	12.0	5.99	1
Benzo(k)fluoranthene	309		ug/kg	12.0	5.99	1
Benzo(a)pyrene	354		ug/kg	12.0	5.99	1
Indeno(1,2,3-cd)Pyrene	290		ug/kg	12.0	5.99	1
Dibenz(a,h)anthracene	64.1		ug/kg	12.0	5.99	1
Benzo(ghi)perylene	302		ug/kg	12.0	5.99	1
Cl2-BZ#8	ND		ug/kg	1.20	0.599	1
Cl3-BZ#18	1.41		ug/kg	1.20	0.599	1
Cl3-BZ#28	2.04		ug/kg	1.20	0.599	1
Cl4-BZ#44	3.54		ug/kg	1.20	0.599	1
Cl4-BZ#49	2.45		ug/kg	1.20	0.599	1
Cl4-BZ#52	4.93		ug/kg	1.20	0.599	1
Cl4-BZ#66	3.31		ug/kg	1.20	0.599	1
Cl5-BZ#87	2.04		ug/kg	1.20	0.599	1
Cl5-BZ#101	5.33		ug/kg	1.20	0.599	1
Cl5-BZ#105	6.57		ug/kg	1.20	0.599	1
Cl5-BZ#118	5.51		ug/kg	1.20	0.599	1
Cl6-BZ#128	1.26		ug/kg	1.20	0.599	1
Cl6-BZ#138	6.85		ug/kg	1.20	0.599	1
Cl6-BZ#153	5.68		ug/kg	1.20	0.599	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-04
Client ID: NHH-J
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 11:41
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	2.07		ug/kg	1.20	0.599	1
CI7-BZ#180	3.46		ug/kg	1.20	0.599	1
CI7-BZ#183	1.09	J	ug/kg	1.20	0.599	1
CI7-BZ#184	ND		ug/kg	1.20	0.599	1
CI7-BZ#187	3.29		ug/kg	1.20	0.599	1
CI8-BZ#195	ND		ug/kg	1.20	0.599	1
CI9-BZ#206	1.78		ug/kg	1.20	0.599	1
CI10-BZ#209	1.06	J	ug/kg	1.20	0.599	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	50		30-150
Pyrene-d10	55		30-150
Benzo(b)fluoranthene-d12	54		30-150
DBOB	73		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-05
 Client ID: NHH-L
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 13:00
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/31/17 09:30
 Cleanup Method: EPA 3630
 Cleanup Date: 09/01/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 09/08/17 05:01
 Analyst: GP
 Percent Solids: 46%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	532		ug/kg	10.3	5.17	1
Acenaphthylene	109		ug/kg	10.3	5.17	1
Acenaphthene	38.4		ug/kg	10.3	5.17	1
Fluorene	53.1		ug/kg	10.3	5.17	1
Phenanthrene	370		ug/kg	10.3	5.17	1
Anthracene	148		ug/kg	10.3	5.17	1
Fluoranthene	900		ug/kg	10.3	5.17	1
Pyrene	929		ug/kg	10.3	5.17	1
Benz(a)anthracene	565		ug/kg	10.3	5.17	1
Chrysene	589		ug/kg	10.3	5.17	1
Benzo(b)fluoranthene	566		ug/kg	10.3	5.17	1
Benzo(k)fluoranthene	404		ug/kg	10.3	5.17	1
Benzo(a)pyrene	570		ug/kg	10.3	5.17	1
Indeno(1,2,3-cd)Pyrene	365		ug/kg	10.3	5.17	1
Dibenz(a,h)anthracene	85.1		ug/kg	10.3	5.17	1
Benzo(ghi)perylene	446		ug/kg	10.3	5.17	1
Cl2-BZ#8	ND		ug/kg	1.03	0.517	1
Cl3-BZ#18	ND		ug/kg	1.03	0.517	1
Cl3-BZ#28	ND		ug/kg	1.03	0.517	1
Cl4-BZ#44	ND		ug/kg	1.03	0.517	1
Cl4-BZ#49	ND		ug/kg	1.03	0.517	1
Cl4-BZ#52	ND		ug/kg	1.03	0.517	1
Cl4-BZ#66	ND		ug/kg	1.03	0.517	1
Cl5-BZ#87	ND		ug/kg	1.03	0.517	1
Cl5-BZ#101	ND		ug/kg	1.03	0.517	1
Cl5-BZ#105	ND		ug/kg	1.03	0.517	1
Cl5-BZ#118	0.621	J	ug/kg	1.03	0.517	1
Cl6-BZ#128	ND		ug/kg	1.03	0.517	1
Cl6-BZ#138	ND		ug/kg	1.03	0.517	1
Cl6-BZ#153	ND		ug/kg	1.03	0.517	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-05

Date Collected: 08/10/17 13:00

Client ID: NHH-L

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.03	0.517	1
Cl7-BZ#180	ND		ug/kg	1.03	0.517	1
Cl7-BZ#183	ND		ug/kg	1.03	0.517	1
Cl7-BZ#184	ND		ug/kg	1.03	0.517	1
Cl7-BZ#187	ND		ug/kg	1.03	0.517	1
Cl8-BZ#195	ND		ug/kg	1.03	0.517	1
Cl9-BZ#206	0.945	J	ug/kg	1.03	0.517	1
Cl10-BZ#209	0.760	J	ug/kg	1.03	0.517	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	74		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	78		30-150
DBOB	94		30-150
BZ 198	93		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-06
 Client ID: NHH-K-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:09
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 16:16
 Analyst: JT
 Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	26.8		ug/kg	10.3	5.16	1
Acenaphthylene	21.3		ug/kg	10.3	5.16	1
Acenaphthene	5.43	J	ug/kg	10.3	5.16	1
Fluorene	10.1	J	ug/kg	10.3	5.16	1
Phenanthrene	63.0		ug/kg	10.3	5.16	1
Anthracene	20.8		ug/kg	10.3	5.16	1
Fluoranthene	185		ug/kg	10.3	5.16	1
Pyrene	179		ug/kg	10.3	5.16	1
Benz(a)anthracene	98.1		ug/kg	10.3	5.16	1
Chrysene	98.9		ug/kg	10.3	5.16	1
Benzo(b)fluoranthene	171		ug/kg	10.3	5.16	1
Benzo(k)fluoranthene	84.3		ug/kg	10.3	5.16	1
Benzo(a)pyrene	107		ug/kg	10.3	5.16	1
Indeno(1,2,3-cd)Pyrene	97.6		ug/kg	10.3	5.16	1
Dibenz(a,h)anthracene	25.8		ug/kg	10.3	5.16	1
Benzo(ghi)perylene	115		ug/kg	10.3	5.16	1
Cl2-BZ#8	ND		ug/kg	1.03	0.516	1
Cl3-BZ#18	ND		ug/kg	1.03	0.516	1
Cl3-BZ#28	ND		ug/kg	1.03	0.516	1
Cl4-BZ#44	0.675	J	ug/kg	1.03	0.516	1
Cl4-BZ#49	ND		ug/kg	1.03	0.516	1
Cl4-BZ#52	0.783	J	ug/kg	1.03	0.516	1
Cl4-BZ#66	0.815	J	ug/kg	1.03	0.516	1
Cl5-BZ#87	ND		ug/kg	1.03	0.516	1
Cl5-BZ#101	ND		ug/kg	1.03	0.516	1
Cl5-BZ#105	ND		ug/kg	1.03	0.516	1
Cl5-BZ#118	1.40		ug/kg	1.03	0.516	1
Cl6-BZ#128	ND		ug/kg	1.03	0.516	1
Cl6-BZ#138	1.60		ug/kg	1.03	0.516	1
Cl6-BZ#153	1.52		ug/kg	1.03	0.516	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-06
Client ID: NHH-K-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.03	0.516	1
Cl7-BZ#180	0.865	J	ug/kg	1.03	0.516	1
Cl7-BZ#183	ND		ug/kg	1.03	0.516	1
Cl7-BZ#184	ND		ug/kg	1.03	0.516	1
Cl7-BZ#187	0.648	J	ug/kg	1.03	0.516	1
Cl8-BZ#195	ND		ug/kg	1.03	0.516	1
Cl9-BZ#206	ND		ug/kg	1.03	0.516	1
Cl10-BZ#209	ND		ug/kg	1.03	0.516	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	64		30-150
Benzo(b)fluoranthene-d12	61		30-150
DBOB	71		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-07
 Client ID: NHH-H-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 16:48
 Analyst: JT
 Percent Solids: 49%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	35.7		ug/kg	10.2	5.09	1
Acenaphthylene	26.6		ug/kg	10.2	5.09	1
Acenaphthene	9.53	J	ug/kg	10.2	5.09	1
Fluorene	18.6		ug/kg	10.2	5.09	1
Phenanthrene	108		ug/kg	10.2	5.09	1
Anthracene	26.3		ug/kg	10.2	5.09	1
Fluoranthene	227		ug/kg	10.2	5.09	1
Pyrene	215		ug/kg	10.2	5.09	1
Benz(a)anthracene	124		ug/kg	10.2	5.09	1
Chrysene	108		ug/kg	10.2	5.09	1
Benzo(b)fluoranthene	208		ug/kg	10.2	5.09	1
Benzo(k)fluoranthene	63.4		ug/kg	10.2	5.09	1
Benzo(a)pyrene	109		ug/kg	10.2	5.09	1
Indeno(1,2,3-cd)Pyrene	119		ug/kg	10.2	5.09	1
Dibenz(a,h)anthracene	22.6		ug/kg	10.2	5.09	1
Benzo(ghi)perylene	119		ug/kg	10.2	5.09	1
Cl2-BZ#8	ND		ug/kg	1.02	0.509	1
Cl3-BZ#18	1.17		ug/kg	1.02	0.509	1
Cl3-BZ#28	0.862	J	ug/kg	1.02	0.509	1
Cl4-BZ#44	1.92		ug/kg	1.02	0.509	1
Cl4-BZ#49	1.45		ug/kg	1.02	0.509	1
Cl4-BZ#52	2.56		ug/kg	1.02	0.509	1
Cl4-BZ#66	1.47		ug/kg	1.02	0.509	1
Cl5-BZ#87	ND		ug/kg	1.02	0.509	1
Cl5-BZ#101	2.73		ug/kg	1.02	0.509	1
Cl5-BZ#105	ND		ug/kg	1.02	0.509	1
Cl5-BZ#118	2.58		ug/kg	1.02	0.509	1
Cl6-BZ#128	ND		ug/kg	1.02	0.509	1
Cl6-BZ#138	3.14		ug/kg	1.02	0.509	1
Cl6-BZ#153	3.43		ug/kg	1.02	0.509	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-07
Client ID: NHH-H-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.994	J	ug/kg	1.02	0.509	1
Cl7-BZ#180	1.53		ug/kg	1.02	0.509	1
Cl7-BZ#183	0.526	J	ug/kg	1.02	0.509	1
Cl7-BZ#184	ND		ug/kg	1.02	0.509	1
Cl7-BZ#187	2.15		ug/kg	1.02	0.509	1
Cl8-BZ#195	ND		ug/kg	1.02	0.509	1
Cl9-BZ#206	0.582	J	ug/kg	1.02	0.509	1
Cl10-BZ#209	ND		ug/kg	1.02	0.509	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	56		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	64		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-08
 Client ID: NHH-H-REP-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 17:21
 Analyst: JT
 Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	42.7		ug/kg	9.79	4.90	1
Acenaphthylene	36.0		ug/kg	9.79	4.90	1
Acenaphthene	9.37	J	ug/kg	9.79	4.90	1
Fluorene	18.6		ug/kg	9.79	4.90	1
Phenanthrene	114		ug/kg	9.79	4.90	1
Anthracene	31.8		ug/kg	9.79	4.90	1
Fluoranthene	286		ug/kg	9.79	4.90	1
Pyrene	277		ug/kg	9.79	4.90	1
Benz(a)anthracene	149		ug/kg	9.79	4.90	1
Chrysene	142		ug/kg	9.79	4.90	1
Benzo(b)fluoranthene	224		ug/kg	9.79	4.90	1
Benzo(k)fluoranthene	124		ug/kg	9.79	4.90	1
Benzo(a)pyrene	148		ug/kg	9.79	4.90	1
Indeno(1,2,3-cd)Pyrene	152		ug/kg	9.79	4.90	1
Dibenz(a,h)anthracene	27.6		ug/kg	9.79	4.90	1
Benzo(ghi)perylene	157		ug/kg	9.79	4.90	1
Cl2-BZ#8	0.553	J	ug/kg	0.979	0.490	1
Cl3-BZ#18	0.847	J	ug/kg	0.979	0.490	1
Cl3-BZ#28	0.972	J	ug/kg	0.979	0.490	1
Cl4-BZ#44	2.10		ug/kg	0.979	0.490	1
Cl4-BZ#49	2.15		ug/kg	0.979	0.490	1
Cl4-BZ#52	3.10		ug/kg	0.979	0.490	1
Cl4-BZ#66	2.32		ug/kg	0.979	0.490	1
Cl5-BZ#87	0.636	J	ug/kg	0.979	0.490	1
Cl5-BZ#101	3.45		ug/kg	0.979	0.490	1
Cl5-BZ#105	ND		ug/kg	0.979	0.490	1
Cl5-BZ#118	2.65		ug/kg	0.979	0.490	1
Cl6-BZ#128	0.614	J	ug/kg	0.979	0.490	1
Cl6-BZ#138	3.97		ug/kg	0.979	0.490	1
Cl6-BZ#153	3.97		ug/kg	0.979	0.490	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-08
 Client ID: NHH-H-REP-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
 Date Received: 08/10/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.13		ug/kg	0.979	0.490	1
Cl7-BZ#180	2.19		ug/kg	0.979	0.490	1
Cl7-BZ#183	0.632	J	ug/kg	0.979	0.490	1
Cl7-BZ#184	ND		ug/kg	0.979	0.490	1
Cl7-BZ#187	2.57		ug/kg	0.979	0.490	1
Cl8-BZ#195	ND		ug/kg	0.979	0.490	1
Cl9-BZ#206	0.942	J	ug/kg	0.979	0.490	1
Cl10-BZ#209	0.548	J	ug/kg	0.979	0.490	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	57		30-150
DBOB	67		30-150
BZ 198	72		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-09
 Client ID: NHH-H-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 17:53
 Analyst: JT
 Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	6.86	3.43	1
Acenaphthylene	ND		ug/kg	6.86	3.43	1
Acenaphthene	ND		ug/kg	6.86	3.43	1
Fluorene	ND		ug/kg	6.86	3.43	1
Phenanthrene	ND		ug/kg	6.86	3.43	1
Anthracene	ND		ug/kg	6.86	3.43	1
Fluoranthene	ND		ug/kg	6.86	3.43	1
Pyrene	ND		ug/kg	6.86	3.43	1
Benz(a)anthracene	ND		ug/kg	6.86	3.43	1
Chrysene	ND		ug/kg	6.86	3.43	1
Benzo(b)fluoranthene	ND		ug/kg	6.86	3.43	1
Benzo(k)fluoranthene	ND		ug/kg	6.86	3.43	1
Benzo(a)pyrene	ND		ug/kg	6.86	3.43	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	6.86	3.43	1
Dibenz(a,h)anthracene	ND		ug/kg	6.86	3.43	1
Benzo(ghi)perylene	ND		ug/kg	6.86	3.43	1
Cl2-BZ#8	ND		ug/kg	0.686	0.343	1
Cl3-BZ#18	ND		ug/kg	0.686	0.343	1
Cl3-BZ#28	ND		ug/kg	0.686	0.343	1
Cl4-BZ#44	ND		ug/kg	0.686	0.343	1
Cl4-BZ#49	ND		ug/kg	0.686	0.343	1
Cl4-BZ#52	ND		ug/kg	0.686	0.343	1
Cl4-BZ#66	ND		ug/kg	0.686	0.343	1
Cl5-BZ#87	ND		ug/kg	0.686	0.343	1
Cl5-BZ#101	ND		ug/kg	0.686	0.343	1
Cl5-BZ#105	ND		ug/kg	0.686	0.343	1
Cl5-BZ#118	ND		ug/kg	0.686	0.343	1
Cl6-BZ#128	ND		ug/kg	0.686	0.343	1
Cl6-BZ#138	ND		ug/kg	0.686	0.343	1
Cl6-BZ#153	ND		ug/kg	0.686	0.343	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-09
 Client ID: NHH-H-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
 Date Received: 08/10/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.686	0.343	1
Cl7-BZ#180	ND		ug/kg	0.686	0.343	1
Cl7-BZ#183	ND		ug/kg	0.686	0.343	1
Cl7-BZ#184	ND		ug/kg	0.686	0.343	1
Cl7-BZ#187	ND		ug/kg	0.686	0.343	1
Cl8-BZ#195	ND		ug/kg	0.686	0.343	1
Cl9-BZ#206	ND		ug/kg	0.686	0.343	1
Cl10-BZ#209	ND		ug/kg	0.686	0.343	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	61		30-150
Benzo(b)fluoranthene-d12	59		30-150
DBOB	73		30-150
BZ 198	71		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-10
 Client ID: NHH-I-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 18:25
 Analyst: JT
 Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.61	4.80	1
Acenaphthylene	ND		ug/kg	9.61	4.80	1
Acenaphthene	ND		ug/kg	9.61	4.80	1
Fluorene	ND		ug/kg	9.61	4.80	1
Phenanthrene	5.41	J	ug/kg	9.61	4.80	1
Anthracene	ND		ug/kg	9.61	4.80	1
Fluoranthene	7.31	J	ug/kg	9.61	4.80	1
Pyrene	8.25	J	ug/kg	9.61	4.80	1
Benz(a)anthracene	ND		ug/kg	9.61	4.80	1
Chrysene	5.52	J	ug/kg	9.61	4.80	1
Benzo(b)fluoranthene	6.09	J	ug/kg	9.61	4.80	1
Benzo(k)fluoranthene	ND		ug/kg	9.61	4.80	1
Benzo(a)pyrene	ND		ug/kg	9.61	4.80	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.61	4.80	1
Dibenz(a,h)anthracene	ND		ug/kg	9.61	4.80	1
Benzo(ghi)perylene	5.01	J	ug/kg	9.61	4.80	1
Cl2-BZ#8	ND		ug/kg	0.961	0.480	1
Cl3-BZ#18	ND		ug/kg	0.961	0.480	1
Cl3-BZ#28	ND		ug/kg	0.961	0.480	1
Cl4-BZ#44	ND		ug/kg	0.961	0.480	1
Cl4-BZ#49	ND		ug/kg	0.961	0.480	1
Cl4-BZ#52	ND		ug/kg	0.961	0.480	1
Cl4-BZ#66	ND		ug/kg	0.961	0.480	1
Cl5-BZ#87	ND		ug/kg	0.961	0.480	1
Cl5-BZ#101	ND		ug/kg	0.961	0.480	1
Cl5-BZ#105	ND		ug/kg	0.961	0.480	1
Cl5-BZ#118	ND		ug/kg	0.961	0.480	1
Cl6-BZ#128	ND		ug/kg	0.961	0.480	1
Cl6-BZ#138	ND		ug/kg	0.961	0.480	1
Cl6-BZ#153	ND		ug/kg	0.961	0.480	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-10
 Client ID: NHH-I-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
 Date Received: 08/10/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.961	0.480	1
Cl7-BZ#180	ND		ug/kg	0.961	0.480	1
Cl7-BZ#183	ND		ug/kg	0.961	0.480	1
Cl7-BZ#184	ND		ug/kg	0.961	0.480	1
Cl7-BZ#187	ND		ug/kg	0.961	0.480	1
Cl8-BZ#195	ND		ug/kg	0.961	0.480	1
Cl9-BZ#206	ND		ug/kg	0.961	0.480	1
Cl10-BZ#209	ND		ug/kg	0.961	0.480	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	49		30-150
Pyrene-d10	58		30-150
Benzo(b)fluoranthene-d12	53		30-150
DBOB	65		30-150
BZ 198	62		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-11
 Client ID: NHH-I-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
 Date Received: 08/10/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 09/08/17 10:19
 Analyst: GP
 Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	10.0	5.03	1
Acenaphthylene	ND		ug/kg	10.0	5.03	1
Acenaphthene	ND		ug/kg	10.0	5.03	1
Fluorene	ND		ug/kg	10.0	5.03	1
Phenanthrene	ND		ug/kg	10.0	5.03	1
Anthracene	ND		ug/kg	10.0	5.03	1
Fluoranthene	ND		ug/kg	10.0	5.03	1
Pyrene	ND		ug/kg	10.0	5.03	1
Benz(a)anthracene	ND		ug/kg	10.0	5.03	1
Chrysene	ND		ug/kg	10.0	5.03	1
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.03	1
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.03	1
Benzo(a)pyrene	ND		ug/kg	10.0	5.03	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.03	1
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.03	1
Benzo(ghi)perylene	ND		ug/kg	10.0	5.03	1
Cl2-BZ#8	ND		ug/kg	1.00	0.503	1
Cl3-BZ#18	ND		ug/kg	1.00	0.503	1
Cl3-BZ#28	ND		ug/kg	1.00	0.503	1
Cl4-BZ#44	ND		ug/kg	1.00	0.503	1
Cl4-BZ#49	ND		ug/kg	1.00	0.503	1
Cl4-BZ#52	ND		ug/kg	1.00	0.503	1
Cl4-BZ#66	ND		ug/kg	1.00	0.503	1
Cl5-BZ#87	ND		ug/kg	1.00	0.503	1
Cl5-BZ#101	ND		ug/kg	1.00	0.503	1
Cl5-BZ#105	ND		ug/kg	1.00	0.503	1
Cl5-BZ#118	ND		ug/kg	1.00	0.503	1
Cl6-BZ#128	ND		ug/kg	1.00	0.503	1
Cl6-BZ#138	ND		ug/kg	1.00	0.503	1
Cl6-BZ#153	ND		ug/kg	1.00	0.503	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-11
Client ID: NHH-I-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.00	0.503	1
Cl7-BZ#180	ND		ug/kg	1.00	0.503	1
Cl7-BZ#183	ND		ug/kg	1.00	0.503	1
Cl7-BZ#184	ND		ug/kg	1.00	0.503	1
Cl7-BZ#187	ND		ug/kg	1.00	0.503	1
Cl8-BZ#195	ND		ug/kg	1.00	0.503	1
Cl9-BZ#206	ND		ug/kg	1.00	0.503	1
Cl10-BZ#209	ND		ug/kg	1.00	0.503	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	68		30-150
DBOB	89		30-150
BZ 198	85		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-12
 Client ID: NHH-G-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 08:37
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 14:22
 Analyst: GP
 Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	83.8		ug/kg	11.0	5.51	1
Acenaphthylene	62.3		ug/kg	11.0	5.51	1
Acenaphthene	12.3		ug/kg	11.0	5.51	1
Fluorene	24.9		ug/kg	11.0	5.51	1
Phenanthrene	194		ug/kg	11.0	5.51	1
Anthracene	69.6		ug/kg	11.0	5.51	1
Fluoranthene	465		ug/kg	11.0	5.51	1
Pyrene	495		ug/kg	11.0	5.51	1
Benz(a)anthracene	245		ug/kg	11.0	5.51	1
Chrysene	277		ug/kg	11.0	5.51	1
Benzo(b)fluoranthene	338		ug/kg	11.0	5.51	1
Benzo(k)fluoranthene	235		ug/kg	11.0	5.51	1
Benzo(a)pyrene	278		ug/kg	11.0	5.51	1
Indeno(1,2,3-cd)Pyrene	215		ug/kg	11.0	5.51	1
Dibenz(a,h)anthracene	52.3		ug/kg	11.0	5.51	1
Benzo(ghi)perylene	247		ug/kg	11.0	5.51	1
Cl2-BZ#8	ND		ug/kg	1.10	0.551	1
Cl3-BZ#18	ND		ug/kg	1.10	0.551	1
Cl3-BZ#28	ND		ug/kg	1.10	0.551	1
Cl4-BZ#44	ND		ug/kg	1.10	0.551	1
Cl4-BZ#49	ND		ug/kg	1.10	0.551	1
Cl4-BZ#52	ND		ug/kg	1.10	0.551	1
Cl4-BZ#66	ND		ug/kg	1.10	0.551	1
Cl5-BZ#87	ND		ug/kg	1.10	0.551	1
Cl5-BZ#101	2.60		ug/kg	1.10	0.551	1
Cl5-BZ#105	ND		ug/kg	1.10	0.551	1
Cl5-BZ#118	ND		ug/kg	1.10	0.551	1
Cl6-BZ#128	ND		ug/kg	1.10	0.551	1
Cl6-BZ#138	3.40		ug/kg	1.10	0.551	1
Cl6-BZ#153	3.04		ug/kg	1.10	0.551	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-12
Client ID: NHH-G-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.10	0.551	1
Cl7-BZ#180	2.73		ug/kg	1.10	0.551	1
Cl7-BZ#183	0.809	J	ug/kg	1.10	0.551	1
Cl7-BZ#184	ND		ug/kg	1.10	0.551	1
Cl7-BZ#187	1.83		ug/kg	1.10	0.551	1
Cl8-BZ#195	ND		ug/kg	1.10	0.551	1
Cl9-BZ#206	1.86		ug/kg	1.10	0.551	1
Cl10-BZ#209	1.70		ug/kg	1.10	0.551	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	66		30-150
Benzo(b)fluoranthene-d12	64		30-150
DBOB	98		30-150
BZ 198	101		30-150

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-13
 Client ID: NHH-G-BOTTOM
 Sample Location: NEW HAVEN, CT

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 14:55
 Analyst: GP
 Percent Solids: 47%

Date Collected: 08/11/17 08:37
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.93	4.97	1
Acenaphthylene	ND		ug/kg	9.93	4.97	1
Acenaphthene	ND		ug/kg	9.93	4.97	1
Fluorene	ND		ug/kg	9.93	4.97	1
Phenanthrene	ND		ug/kg	9.93	4.97	1
Anthracene	ND		ug/kg	9.93	4.97	1
Fluoranthene	ND		ug/kg	9.93	4.97	1
Pyrene	5.23	J	ug/kg	9.93	4.97	1
Benz(a)anthracene	ND		ug/kg	9.93	4.97	1
Chrysene	ND		ug/kg	9.93	4.97	1
Benzo(b)fluoranthene	ND		ug/kg	9.93	4.97	1
Benzo(k)fluoranthene	ND		ug/kg	9.93	4.97	1
Benzo(a)pyrene	ND		ug/kg	9.93	4.97	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.93	4.97	1
Dibenz(a,h)anthracene	ND		ug/kg	9.93	4.97	1
Benzo(ghi)perylene	ND		ug/kg	9.93	4.97	1
Cl2-BZ#8	ND		ug/kg	0.993	0.497	1
Cl3-BZ#18	ND		ug/kg	0.993	0.497	1
Cl3-BZ#28	ND		ug/kg	0.993	0.497	1
Cl4-BZ#44	ND		ug/kg	0.993	0.497	1
Cl4-BZ#49	ND		ug/kg	0.993	0.497	1
Cl4-BZ#52	ND		ug/kg	0.993	0.497	1
Cl4-BZ#66	ND		ug/kg	0.993	0.497	1
Cl5-BZ#87	ND		ug/kg	0.993	0.497	1
Cl5-BZ#101	ND		ug/kg	0.993	0.497	1
Cl5-BZ#105	ND		ug/kg	0.993	0.497	1
Cl5-BZ#118	ND		ug/kg	0.993	0.497	1
Cl6-BZ#128	ND		ug/kg	0.993	0.497	1
Cl6-BZ#138	ND		ug/kg	0.993	0.497	1
Cl6-BZ#153	ND		ug/kg	0.993	0.497	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-13
 Client ID: NHH-G-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 08:37
 Date Received: 08/11/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.993	0.497	1
Cl7-BZ#180	ND		ug/kg	0.993	0.497	1
Cl7-BZ#183	ND		ug/kg	0.993	0.497	1
Cl7-BZ#184	ND		ug/kg	0.993	0.497	1
Cl7-BZ#187	ND		ug/kg	0.993	0.497	1
Cl8-BZ#195	ND		ug/kg	0.993	0.497	1
Cl9-BZ#206	ND		ug/kg	0.993	0.497	1
Cl10-BZ#209	ND		ug/kg	0.993	0.497	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	66		30-150
Pyrene-d10	74		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	102		30-150
BZ 198	92		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-14
 Client ID: NHH-C-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 15:28
 Analyst: GP
 Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	6.58	3.29	1
Acenaphthylene	ND		ug/kg	6.58	3.29	1
Acenaphthene	ND		ug/kg	6.58	3.29	1
Fluorene	ND		ug/kg	6.58	3.29	1
Phenanthrene	6.02	J	ug/kg	6.58	3.29	1
Anthracene	ND		ug/kg	6.58	3.29	1
Fluoranthene	8.65		ug/kg	6.58	3.29	1
Pyrene	12.6		ug/kg	6.58	3.29	1
Benz(a)anthracene	5.97	J	ug/kg	6.58	3.29	1
Chrysene	7.06		ug/kg	6.58	3.29	1
Benzo(b)fluoranthene	10.9		ug/kg	6.58	3.29	1
Benzo(k)fluoranthene	6.81		ug/kg	6.58	3.29	1
Benzo(a)pyrene	8.58		ug/kg	6.58	3.29	1
Indeno(1,2,3-cd)Pyrene	7.17		ug/kg	6.58	3.29	1
Dibenz(a,h)anthracene	ND		ug/kg	6.58	3.29	1
Benzo(ghi)perylene	8.33		ug/kg	6.58	3.29	1
Cl2-BZ#8	ND		ug/kg	0.658	0.329	1
Cl3-BZ#18	ND		ug/kg	0.658	0.329	1
Cl3-BZ#28	ND		ug/kg	0.658	0.329	1
Cl4-BZ#44	ND		ug/kg	0.658	0.329	1
Cl4-BZ#49	ND		ug/kg	0.658	0.329	1
Cl4-BZ#52	ND		ug/kg	0.658	0.329	1
Cl4-BZ#66	ND		ug/kg	0.658	0.329	1
Cl5-BZ#87	ND		ug/kg	0.658	0.329	1
Cl5-BZ#101	ND		ug/kg	0.658	0.329	1
Cl5-BZ#105	ND		ug/kg	0.658	0.329	1
Cl5-BZ#118	ND		ug/kg	0.658	0.329	1
Cl6-BZ#128	ND		ug/kg	0.658	0.329	1
Cl6-BZ#138	ND		ug/kg	0.658	0.329	1
Cl6-BZ#153	ND		ug/kg	0.658	0.329	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-14
Client ID: NHH-C-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.658	0.329	1
Cl7-BZ#180	ND		ug/kg	0.658	0.329	1
Cl7-BZ#183	ND		ug/kg	0.658	0.329	1
Cl7-BZ#184	ND		ug/kg	0.658	0.329	1
Cl7-BZ#187	ND		ug/kg	0.658	0.329	1
Cl8-BZ#195	ND		ug/kg	0.658	0.329	1
Cl9-BZ#206	ND		ug/kg	0.658	0.329	1
Cl10-BZ#209	ND		ug/kg	0.658	0.329	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	73		30-150
Pyrene-d10	80		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	104		30-150
BZ 198	93		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-15
 Client ID: NHH-C-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 16:01
 Analyst: GP
 Percent Solids: 62%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	7.57	3.79	1
Acenaphthylene	ND		ug/kg	7.57	3.79	1
Acenaphthene	ND		ug/kg	7.57	3.79	1
Fluorene	ND		ug/kg	7.57	3.79	1
Phenanthrene	ND		ug/kg	7.57	3.79	1
Anthracene	ND		ug/kg	7.57	3.79	1
Fluoranthene	ND		ug/kg	7.57	3.79	1
Pyrene	ND		ug/kg	7.57	3.79	1
Benz(a)anthracene	ND		ug/kg	7.57	3.79	1
Chrysene	ND		ug/kg	7.57	3.79	1
Benzo(b)fluoranthene	ND		ug/kg	7.57	3.79	1
Benzo(k)fluoranthene	ND		ug/kg	7.57	3.79	1
Benzo(a)pyrene	ND		ug/kg	7.57	3.79	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	7.57	3.79	1
Dibenz(a,h)anthracene	ND		ug/kg	7.57	3.79	1
Benzo(ghi)perylene	ND		ug/kg	7.57	3.79	1
Cl2-BZ#8	ND		ug/kg	0.757	0.379	1
Cl3-BZ#18	ND		ug/kg	0.757	0.379	1
Cl3-BZ#28	ND		ug/kg	0.757	0.379	1
Cl4-BZ#44	ND		ug/kg	0.757	0.379	1
Cl4-BZ#49	ND		ug/kg	0.757	0.379	1
Cl4-BZ#52	ND		ug/kg	0.757	0.379	1
Cl4-BZ#66	ND		ug/kg	0.757	0.379	1
Cl5-BZ#87	ND		ug/kg	0.757	0.379	1
Cl5-BZ#101	ND		ug/kg	0.757	0.379	1
Cl5-BZ#105	ND		ug/kg	0.757	0.379	1
Cl5-BZ#118	ND		ug/kg	0.757	0.379	1
Cl6-BZ#128	ND		ug/kg	0.757	0.379	1
Cl6-BZ#138	ND		ug/kg	0.757	0.379	1
Cl6-BZ#153	ND		ug/kg	0.757	0.379	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-15
 Client ID: NHH-C-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
 Date Received: 08/11/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.757	0.379	1
Cl7-BZ#180	ND		ug/kg	0.757	0.379	1
Cl7-BZ#183	ND		ug/kg	0.757	0.379	1
Cl7-BZ#184	ND		ug/kg	0.757	0.379	1
Cl7-BZ#187	ND		ug/kg	0.757	0.379	1
Cl8-BZ#195	ND		ug/kg	0.757	0.379	1
Cl9-BZ#206	ND		ug/kg	0.757	0.379	1
Cl10-BZ#209	ND		ug/kg	0.757	0.379	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	95		30-150
BZ 198	85		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-16
 Client ID: NHH-B
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 11:57
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 15:15
 Cleanup Method: EPA 3630
 Cleanup Date: 08/26/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/29/17 18:57
 Analyst: JT
 Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	6.81	3.40	1
Acenaphthylene	ND		ug/kg	6.81	3.40	1
Acenaphthene	ND		ug/kg	6.81	3.40	1
Fluorene	ND		ug/kg	6.81	3.40	1
Phenanthrene	ND		ug/kg	6.81	3.40	1
Anthracene	ND		ug/kg	6.81	3.40	1
Fluoranthene	ND		ug/kg	6.81	3.40	1
Pyrene	ND		ug/kg	6.81	3.40	1
Benz(a)anthracene	ND		ug/kg	6.81	3.40	1
Chrysene	ND		ug/kg	6.81	3.40	1
Benzo(b)fluoranthene	ND		ug/kg	6.81	3.40	1
Benzo(k)fluoranthene	ND		ug/kg	6.81	3.40	1
Benzo(a)pyrene	ND		ug/kg	6.81	3.40	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	6.81	3.40	1
Dibenz(a,h)anthracene	ND		ug/kg	6.81	3.40	1
Benzo(ghi)perylene	ND		ug/kg	6.81	3.40	1
Cl2-BZ#8	ND		ug/kg	0.681	0.340	1
Cl3-BZ#18	ND		ug/kg	0.681	0.340	1
Cl3-BZ#28	ND		ug/kg	0.681	0.340	1
Cl4-BZ#44	ND		ug/kg	0.681	0.340	1
Cl4-BZ#49	ND		ug/kg	0.681	0.340	1
Cl4-BZ#52	ND		ug/kg	0.681	0.340	1
Cl4-BZ#66	ND		ug/kg	0.681	0.340	1
Cl5-BZ#87	ND		ug/kg	0.681	0.340	1
Cl5-BZ#101	ND		ug/kg	0.681	0.340	1
Cl5-BZ#105	ND		ug/kg	0.681	0.340	1
Cl5-BZ#118	ND		ug/kg	0.681	0.340	1
Cl6-BZ#128	ND		ug/kg	0.681	0.340	1
Cl6-BZ#138	ND		ug/kg	0.681	0.340	1
Cl6-BZ#153	ND		ug/kg	0.681	0.340	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-16
Client ID: NHH-B
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 11:57
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.681	0.340	1
Cl7-BZ#180	ND		ug/kg	0.681	0.340	1
Cl7-BZ#183	ND		ug/kg	0.681	0.340	1
Cl7-BZ#184	ND		ug/kg	0.681	0.340	1
Cl7-BZ#187	ND		ug/kg	0.681	0.340	1
Cl8-BZ#195	ND		ug/kg	0.681	0.340	1
Cl9-BZ#206	ND		ug/kg	0.681	0.340	1
Cl10-BZ#209	ND		ug/kg	0.681	0.340	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	53		30-150
Pyrene-d10	56		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	62		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-17
 Client ID: NHH-A-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 13:40
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 16:33
 Analyst: GP
 Percent Solids: 61%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	8.06	4.03	1
Acenaphthylene	ND		ug/kg	8.06	4.03	1
Acenaphthene	ND		ug/kg	8.06	4.03	1
Fluorene	ND		ug/kg	8.06	4.03	1
Phenanthrene	5.18	J	ug/kg	8.06	4.03	1
Anthracene	ND		ug/kg	8.06	4.03	1
Fluoranthene	10.7		ug/kg	8.06	4.03	1
Pyrene	17.6		ug/kg	8.06	4.03	1
Benz(a)anthracene	6.64	J	ug/kg	8.06	4.03	1
Chrysene	7.58	J	ug/kg	8.06	4.03	1
Benzo(b)fluoranthene	8.12		ug/kg	8.06	4.03	1
Benzo(k)fluoranthene	8.93		ug/kg	8.06	4.03	1
Benzo(a)pyrene	8.08		ug/kg	8.06	4.03	1
Indeno(1,2,3-cd)Pyrene	6.56	J	ug/kg	8.06	4.03	1
Dibenz(a,h)anthracene	ND		ug/kg	8.06	4.03	1
Benzo(ghi)perylene	7.84	J	ug/kg	8.06	4.03	1
Cl2-BZ#8	ND		ug/kg	0.806	0.403	1
Cl3-BZ#18	ND		ug/kg	0.806	0.403	1
Cl3-BZ#28	ND		ug/kg	0.806	0.403	1
Cl4-BZ#44	ND		ug/kg	0.806	0.403	1
Cl4-BZ#49	ND		ug/kg	0.806	0.403	1
Cl4-BZ#52	ND		ug/kg	0.806	0.403	1
Cl4-BZ#66	ND		ug/kg	0.806	0.403	1
Cl5-BZ#87	ND		ug/kg	0.806	0.403	1
Cl5-BZ#101	ND		ug/kg	0.806	0.403	1
Cl5-BZ#105	ND		ug/kg	0.806	0.403	1
Cl5-BZ#118	ND		ug/kg	0.806	0.403	1
Cl6-BZ#128	ND		ug/kg	0.806	0.403	1
Cl6-BZ#138	ND		ug/kg	0.806	0.403	1
Cl6-BZ#153	ND		ug/kg	0.806	0.403	1



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-17
 Client ID: NHH-A-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 13:40
 Date Received: 08/11/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.806	0.403	1
Cl7-BZ#180	ND		ug/kg	0.806	0.403	1
Cl7-BZ#183	ND		ug/kg	0.806	0.403	1
Cl7-BZ#184	ND		ug/kg	0.806	0.403	1
Cl7-BZ#187	ND		ug/kg	0.806	0.403	1
Cl8-BZ#195	ND		ug/kg	0.806	0.403	1
Cl9-BZ#206	ND		ug/kg	0.806	0.403	1
Cl10-BZ#209	ND		ug/kg	0.806	0.403	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	65		30-150
Pyrene-d10	77		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	98		30-150
BZ 198	91		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-18
 Client ID: NHH-D-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 17:06
 Analyst: GP
 Percent Solids: 60%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	7.94	3.97	1
Acenaphthylene	ND		ug/kg	7.94	3.97	1
Acenaphthene	ND		ug/kg	7.94	3.97	1
Fluorene	ND		ug/kg	7.94	3.97	1
Phenanthrene	ND		ug/kg	7.94	3.97	1
Anthracene	ND		ug/kg	7.94	3.97	1
Fluoranthene	ND		ug/kg	7.94	3.97	1
Pyrene	ND		ug/kg	7.94	3.97	1
Benz(a)anthracene	ND		ug/kg	7.94	3.97	1
Chrysene	ND		ug/kg	7.94	3.97	1
Benzo(b)fluoranthene	ND		ug/kg	7.94	3.97	1
Benzo(k)fluoranthene	ND		ug/kg	7.94	3.97	1
Benzo(a)pyrene	ND		ug/kg	7.94	3.97	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	7.94	3.97	1
Dibenz(a,h)anthracene	ND		ug/kg	7.94	3.97	1
Benzo(ghi)perylene	ND		ug/kg	7.94	3.97	1
Cl2-BZ#8	ND		ug/kg	0.794	0.397	1
Cl3-BZ#18	ND		ug/kg	0.794	0.397	1
Cl3-BZ#28	ND		ug/kg	0.794	0.397	1
Cl4-BZ#44	ND		ug/kg	0.794	0.397	1
Cl4-BZ#49	ND		ug/kg	0.794	0.397	1
Cl4-BZ#52	ND		ug/kg	0.794	0.397	1
Cl4-BZ#66	ND		ug/kg	0.794	0.397	1
Cl5-BZ#87	ND		ug/kg	0.794	0.397	1
Cl5-BZ#101	ND		ug/kg	0.794	0.397	1
Cl5-BZ#105	ND		ug/kg	0.794	0.397	1
Cl5-BZ#118	ND		ug/kg	0.794	0.397	1
Cl6-BZ#128	ND		ug/kg	0.794	0.397	1
Cl6-BZ#138	ND		ug/kg	0.794	0.397	1
Cl6-BZ#153	ND		ug/kg	0.794	0.397	1



Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**SAMPLE RESULTS**

Lab ID: L1728049-18
 Client ID: NHH-D-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
 Date Received: 08/11/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.794	0.397	1
Cl7-BZ#180	ND		ug/kg	0.794	0.397	1
Cl7-BZ#183	ND		ug/kg	0.794	0.397	1
Cl7-BZ#184	ND		ug/kg	0.794	0.397	1
Cl7-BZ#187	ND		ug/kg	0.794	0.397	1
Cl8-BZ#195	ND		ug/kg	0.794	0.397	1
Cl9-BZ#206	ND		ug/kg	0.794	0.397	1
Cl10-BZ#209	ND		ug/kg	0.794	0.397	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	91		30-150
BZ 198	83		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-19
 Client ID: NHH-D-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 17:38
 Analyst: GP
 Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	6.92	3.46	1
Acenaphthylene	ND		ug/kg	6.92	3.46	1
Acenaphthene	ND		ug/kg	6.92	3.46	1
Fluorene	ND		ug/kg	6.92	3.46	1
Phenanthrene	ND		ug/kg	6.92	3.46	1
Anthracene	ND		ug/kg	6.92	3.46	1
Fluoranthene	ND		ug/kg	6.92	3.46	1
Pyrene	ND		ug/kg	6.92	3.46	1
Benz(a)anthracene	ND		ug/kg	6.92	3.46	1
Chrysene	ND		ug/kg	6.92	3.46	1
Benzo(b)fluoranthene	ND		ug/kg	6.92	3.46	1
Benzo(k)fluoranthene	ND		ug/kg	6.92	3.46	1
Benzo(a)pyrene	ND		ug/kg	6.92	3.46	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	6.92	3.46	1
Dibenz(a,h)anthracene	ND		ug/kg	6.92	3.46	1
Benzo(ghi)perylene	ND		ug/kg	6.92	3.46	1
Cl2-BZ#8	ND		ug/kg	0.692	0.346	1
Cl3-BZ#18	ND		ug/kg	0.692	0.346	1
Cl3-BZ#28	ND		ug/kg	0.692	0.346	1
Cl4-BZ#44	ND		ug/kg	0.692	0.346	1
Cl4-BZ#49	ND		ug/kg	0.692	0.346	1
Cl4-BZ#52	ND		ug/kg	0.692	0.346	1
Cl4-BZ#66	ND		ug/kg	0.692	0.346	1
Cl5-BZ#87	ND		ug/kg	0.692	0.346	1
Cl5-BZ#101	ND		ug/kg	0.692	0.346	1
Cl5-BZ#105	ND		ug/kg	0.692	0.346	1
Cl5-BZ#118	ND		ug/kg	0.692	0.346	1
Cl6-BZ#128	ND		ug/kg	0.692	0.346	1
Cl6-BZ#138	ND		ug/kg	0.692	0.346	1
Cl6-BZ#153	ND		ug/kg	0.692	0.346	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-19
Client ID: NHH-D-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.692	0.346	1
Cl7-BZ#180	ND		ug/kg	0.692	0.346	1
Cl7-BZ#183	ND		ug/kg	0.692	0.346	1
Cl7-BZ#184	ND		ug/kg	0.692	0.346	1
Cl7-BZ#187	ND		ug/kg	0.692	0.346	1
Cl8-BZ#195	ND		ug/kg	0.692	0.346	1
Cl9-BZ#206	ND		ug/kg	0.692	0.346	1
Cl10-BZ#209	ND		ug/kg	0.692	0.346	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	73		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	97		30-150
BZ 198	85		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-20
 Client ID: NHH-F-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 18:11
 Analyst: GP
 Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	36.3		ug/kg	12.0	5.98	1
Acenaphthylene	41.7		ug/kg	12.0	5.98	1
Acenaphthene	20.4		ug/kg	12.0	5.98	1
Fluorene	27.3		ug/kg	12.0	5.98	1
Phenanthrene	134		ug/kg	12.0	5.98	1
Anthracene	44.0		ug/kg	12.0	5.98	1
Fluoranthene	226		ug/kg	12.0	5.98	1
Pyrene	269		ug/kg	12.0	5.98	1
Benz(a)anthracene	120		ug/kg	12.0	5.98	1
Chrysene	167		ug/kg	12.0	5.98	1
Benzo(b)fluoranthene	217		ug/kg	12.0	5.98	1
Benzo(k)fluoranthene	161		ug/kg	12.0	5.98	1
Benzo(a)pyrene	181		ug/kg	12.0	5.98	1
Indeno(1,2,3-cd)Pyrene	146		ug/kg	12.0	5.98	1
Dibenz(a,h)anthracene	42.5		ug/kg	12.0	5.98	1
Benzo(ghi)perylene	170		ug/kg	12.0	5.98	1
Cl2-BZ#8	ND		ug/kg	1.20	0.598	1
Cl3-BZ#18	ND		ug/kg	1.20	0.598	1
Cl3-BZ#28	ND		ug/kg	1.20	0.598	1
Cl4-BZ#44	ND		ug/kg	1.20	0.598	1
Cl4-BZ#49	ND		ug/kg	1.20	0.598	1
Cl4-BZ#52	1.97		ug/kg	1.20	0.598	1
Cl4-BZ#66	1.95		ug/kg	1.20	0.598	1
Cl5-BZ#87	ND		ug/kg	1.20	0.598	1
Cl5-BZ#101	2.88		ug/kg	1.20	0.598	1
Cl5-BZ#105	1.57		ug/kg	1.20	0.598	1
Cl5-BZ#118	3.06		ug/kg	1.20	0.598	1
Cl6-BZ#128	0.889	J	ug/kg	1.20	0.598	1
Cl6-BZ#138	4.13		ug/kg	1.20	0.598	1
Cl6-BZ#153	3.58		ug/kg	1.20	0.598	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-20
Client ID: NHH-F-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.979	J	ug/kg	1.20	0.598	1
Cl7-BZ#180	1.74		ug/kg	1.20	0.598	1
Cl7-BZ#183	ND		ug/kg	1.20	0.598	1
Cl7-BZ#184	ND		ug/kg	1.20	0.598	1
Cl7-BZ#187	1.92		ug/kg	1.20	0.598	1
Cl8-BZ#195	ND		ug/kg	1.20	0.598	1
Cl9-BZ#206	ND		ug/kg	1.20	0.598	1
Cl10-BZ#209	ND		ug/kg	1.20	0.598	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	71		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	98		30-150
BZ 198	94		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-21
 Client ID: NHH-F-REP-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 18:43
 Analyst: GP
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	41.4		ug/kg	11.3	5.63	1
Acenaphthylene	49.6		ug/kg	11.3	5.63	1
Acenaphthene	6.58	J	ug/kg	11.3	5.63	1
Fluorene	14.1		ug/kg	11.3	5.63	1
Phenanthrene	95.1		ug/kg	11.3	5.63	1
Anthracene	52.1		ug/kg	11.3	5.63	1
Fluoranthene	259		ug/kg	11.3	5.63	1
Pyrene	297		ug/kg	11.3	5.63	1
Benz(a)anthracene	127		ug/kg	11.3	5.63	1
Chrysene	176		ug/kg	11.3	5.63	1
Benzo(b)fluoranthene	229		ug/kg	11.3	5.63	1
Benzo(k)fluoranthene	178		ug/kg	11.3	5.63	1
Benzo(a)pyrene	198		ug/kg	11.3	5.63	1
Indeno(1,2,3-cd)Pyrene	158		ug/kg	11.3	5.63	1
Dibenz(a,h)anthracene	45.0		ug/kg	11.3	5.63	1
Benzo(ghi)perylene	183		ug/kg	11.3	5.63	1
Cl2-BZ#8	ND		ug/kg	1.13	0.563	1
Cl3-BZ#18	ND		ug/kg	1.13	0.563	1
Cl3-BZ#28	ND		ug/kg	1.13	0.563	1
Cl4-BZ#44	ND		ug/kg	1.13	0.563	1
Cl4-BZ#49	ND		ug/kg	1.13	0.563	1
Cl4-BZ#52	2.89		ug/kg	1.13	0.563	1
Cl4-BZ#66	2.22		ug/kg	1.13	0.563	1
Cl5-BZ#87	ND		ug/kg	1.13	0.563	1
Cl5-BZ#101	3.33		ug/kg	1.13	0.563	1
Cl5-BZ#105	1.23		ug/kg	1.13	0.563	1
Cl5-BZ#118	3.44		ug/kg	1.13	0.563	1
Cl6-BZ#128	1.13		ug/kg	1.13	0.563	1
Cl6-BZ#138	5.06		ug/kg	1.13	0.563	1
Cl6-BZ#153	3.91		ug/kg	1.13	0.563	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-21
Client ID: NHH-F-REP-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	1.33		ug/kg	1.13	0.563	1
Cl7-BZ#180	2.24		ug/kg	1.13	0.563	1
Cl7-BZ#183	0.758	J	ug/kg	1.13	0.563	1
Cl7-BZ#184	ND		ug/kg	1.13	0.563	1
Cl7-BZ#187	2.29		ug/kg	1.13	0.563	1
Cl8-BZ#195	ND		ug/kg	1.13	0.563	1
Cl9-BZ#206	0.988	J	ug/kg	1.13	0.563	1
Cl10-BZ#209	0.845	J	ug/kg	1.13	0.563	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	71		30-150
Pyrene-d10	77		30-150
Benzo(b)fluoranthene-d12	72		30-150
DBOB	108		30-150
BZ 198	99		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-22
 Client ID: NHH-F-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
 Date Received: 08/11/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/18/17 16:00
 Cleanup Method: EPA 3630
 Cleanup Date: 08/25/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/30/17 19:16
 Analyst: GP
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	116		ug/kg	10.2	5.10	1
Acenaphthylene	60.7		ug/kg	10.2	5.10	1
Acenaphthene	24.0		ug/kg	10.2	5.10	1
Fluorene	36.3		ug/kg	10.2	5.10	1
Phenanthrene	234		ug/kg	10.2	5.10	1
Anthracene	67.1		ug/kg	10.2	5.10	1
Fluoranthene	457		ug/kg	10.2	5.10	1
Pyrene	469		ug/kg	10.2	5.10	1
Benz(a)anthracene	243		ug/kg	10.2	5.10	1
Chrysene	263		ug/kg	10.2	5.10	1
Benzo(b)fluoranthene	323		ug/kg	10.2	5.10	1
Benzo(k)fluoranthene	184		ug/kg	10.2	5.10	1
Benzo(a)pyrene	235		ug/kg	10.2	5.10	1
Indeno(1,2,3-cd)Pyrene	194		ug/kg	10.2	5.10	1
Dibenz(a,h)anthracene	49.3		ug/kg	10.2	5.10	1
Benzo(ghi)perylene	229		ug/kg	10.2	5.10	1
Cl2-BZ#8	ND		ug/kg	1.02	0.510	1
Cl3-BZ#18	ND		ug/kg	1.02	0.510	1
Cl3-BZ#28	ND		ug/kg	1.02	0.510	1
Cl4-BZ#44	ND		ug/kg	1.02	0.510	1
Cl4-BZ#49	ND		ug/kg	1.02	0.510	1
Cl4-BZ#52	ND		ug/kg	1.02	0.510	1
Cl4-BZ#66	ND		ug/kg	1.02	0.510	1
Cl5-BZ#87	ND		ug/kg	1.02	0.510	1
Cl5-BZ#101	2.06		ug/kg	1.02	0.510	1
Cl5-BZ#105	ND		ug/kg	1.02	0.510	1
Cl5-BZ#118	3.80		ug/kg	1.02	0.510	1
Cl6-BZ#128	ND		ug/kg	1.02	0.510	1
Cl6-BZ#138	2.95		ug/kg	1.02	0.510	1
Cl6-BZ#153	2.87		ug/kg	1.02	0.510	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-22
Client ID: NHH-F-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	0.605	J	ug/kg	1.02	0.510	1
Cl7-BZ#180	2.20		ug/kg	1.02	0.510	1
Cl7-BZ#183	0.692	J	ug/kg	1.02	0.510	1
Cl7-BZ#184	ND		ug/kg	1.02	0.510	1
Cl7-BZ#187	1.78		ug/kg	1.02	0.510	1
Cl8-BZ#195	ND		ug/kg	1.02	0.510	1
Cl9-BZ#206	2.28		ug/kg	1.02	0.510	1
Cl10-BZ#209	3.23		ug/kg	1.02	0.510	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	66		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	66		30-150
DBOB	99		30-150
BZ 198	99		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 08/29/17 11:26

Extraction Date: 08/18/17 15:15

Analyst: JT

Cleanup Method: EPA 3630

Cleanup Date: 08/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-04,06-10,16 Batch: WG1033334-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 08/29/17 11:26

Analyst: JT

Extraction Method: EPA 3570

Extraction Date: 08/18/17 15:15

Cleanup Method: EPA 3630

Cleanup Date: 08/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-04,06-10,16 Batch: WG1033334-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	63		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	74		30-150
BZ 198	69		30-150



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 08/30/17 11:29

Extraction Date: 08/18/17 16:00

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 08/25/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 11-15,17-22 Batch: WG1033339-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 08/30/17 11:29

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 08/18/17 16:00

Cleanup Method: EPA 3630

Cleanup Date: 08/25/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 11-15,17-22 Batch: WG1033339-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	70		30-150
Benzo(b)fluoranthene-d12	72		30-150
DBOB	85		30-150
BZ 198	90		30-150



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 09/08/17 00:47

Extraction Date: 08/31/17 09:30

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 09/01/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 05 Batch: WG1037293-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 09/08/17 00:47

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 08/31/17 09:30

Cleanup Method: EPA 3630

Cleanup Date: 09/01/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 05 Batch: WG1037293-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	70		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	95		30-150
BZ 198	87		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 Batch: WG1033334-2 WG1033334-3								
Naphthalene	59		56		50-120	5		30
Acenaphthylene	60		56		50-120	7		30
Acenaphthene	58		54		50-120	7		30
Fluorene	60		56		50-120	7		30
Phenanthrene	59		54		50-120	9		30
Anthracene	62		61		50-120	2		30
Fluoranthene	57		56		50-120	2		30
Pyrene	62		59		50-120	5		30
Benz(a)anthracene	63		64		50-120	2		30
Chrysene	62		60		50-120	3		30
Benzo(b)fluoranthene	68		60		50-120	13		30
Benzo(k)fluoranthene	59		64		50-120	8		30
Benzo(a)pyrene	65		60		50-120	8		30
Indeno(1,2,3-cd)Pyrene	62		64		50-120	3		30
Dibenz(a,h)anthracene	64		61		50-120	5		30
Benzo(ghi)perylene	67		65		50-120	3		30
Cl2-BZ#8	84		71		50-120	17		30
Cl3-BZ#18	79		66		50-120	18		30
Cl3-BZ#28	79		67		50-120	16		30
Cl4-BZ#44	79		70		50-120	12		30
Cl4-BZ#49	79		69		50-120	14		30
Cl4-BZ#52	76		66		50-120	14		30
Cl4-BZ#66	79		69		50-120	14		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 Batch: WG1033334-2 WG1033334-3								
Cl5-BZ#87	77		69		50-120	11		30
Cl5-BZ#101	75		66		50-120	13		30
Cl5-BZ#105	76		68		50-120	11		30
Cl5-BZ#118	77		69		50-120	11		30
Cl6-BZ#128	75		68		50-120	10		30
Cl6-BZ#138	76		68		50-120	11		30
Cl6-BZ#153	79		69		50-120	14		30
Cl7-BZ#170	75		66		50-120	13		30
Cl7-BZ#180	73		64		50-120	13		30
Cl7-BZ#183	71		65		50-120	9		30
Cl7-BZ#184	74		66		50-120	11		30
Cl7-BZ#187	74		65		50-120	13		30
Cl8-BZ#195	73		64		50-120	13		30
Cl9-BZ#206	71		63		50-120	12		30
Cl10-BZ#209	75		66		50-120	13		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	57		55		30-150
Pyrene-d10	67		62		30-150
Benzo(b)fluoranthene-d12	64		60		30-150
DBOB	76		65		30-150
BZ 198	75		64		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 Batch: WG1033339-2 WG1033339-3								
Naphthalene	60		56		50-120	7		30
Acenaphthylene	65		58		50-120	11		30
Acenaphthene	65		56		50-120	15		30
Fluorene	69		58		50-120	17		30
Phenanthrene	74		57		50-120	26		30
Anthracene	72		67		50-120	7		30
Fluoranthene	74		62		50-120	18		30
Pyrene	73		62		50-120	16		30
Benz(a)anthracene	82		60		50-120	31	Q	30
Chrysene	70		67		50-120	4		30
Benzo(b)fluoranthene	88		65		50-120	30		30
Benzo(k)fluoranthene	76		74		50-120	3		30
Benzo(a)pyrene	78		66		50-120	17		30
Indeno(1,2,3-cd)Pyrene	65		63		50-120	3		30
Dibenz(a,h)anthracene	73		62		50-120	16		30
Benzo(ghi)perylene	75		63		50-120	17		30
Cl2-BZ#8	104		87		50-120	18		30
Cl3-BZ#18	107		81		50-120	28		30
Cl3-BZ#28	98		82		50-120	18		30
Cl4-BZ#44	102		85		50-120	18		30
Cl4-BZ#49	90		88		50-120	2		30
Cl4-BZ#52	108		78		50-120	32	Q	30
Cl4-BZ#66	105		86		50-120	20		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 Batch: WG1033339-2 WG1033339-3								
Cl5-BZ#87	102		86		50-120	17		30
Cl5-BZ#101	102		84		50-120	19		30
Cl5-BZ#105	96		87		50-120	10		30
Cl5-BZ#118	102		86		50-120	17		30
Cl6-BZ#128	104		88		50-120	17		30
Cl6-BZ#138	103		86		50-120	18		30
Cl6-BZ#153	105		87		50-120	19		30
Cl7-BZ#170	100		85		50-120	16		30
Cl7-BZ#180	97		83		50-120	16		30
Cl7-BZ#183	91		86		50-120	6		30
Cl7-BZ#184	99		83		50-120	18		30
Cl7-BZ#187	107		81		50-120	28		30
Cl8-BZ#195	98		84		50-120	15		30
Cl9-BZ#206	95		80		50-120	17		30
Cl10-BZ#209	100		85		50-120	16		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	60		55		30-150
Pyrene-d10	74		63		30-150
Benzo(b)fluoranthene-d12	79		67		30-150
DBOB	101		87		30-150
BZ 198	97		83		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 05 Batch: WG1037293-2 WG1037293-3								
Naphthalene	76		73		50-120	4		30
Acenaphthylene	76		74		50-120	3		30
Acenaphthene	74		72		50-120	3		30
Fluorene	79		75		50-120	5		30
Phenanthrene	82		78		50-120	5		30
Anthracene	80		76		50-120	5		30
Fluoranthene	84		78		50-120	7		30
Pyrene	78		75		50-120	4		30
Benz(a)anthracene	87		84		50-120	4		30
Chrysene	84		81		50-120	4		30
Benzo(b)fluoranthene	84		80		50-120	5		30
Benzo(k)fluoranthene	88		86		50-120	2		30
Benzo(a)pyrene	87		84		50-120	4		30
Indeno(1,2,3-cd)Pyrene	87		82		50-120	6		30
Dibenz(a,h)anthracene	84		80		50-120	5		30
Benzo(ghi)perylene	88		85		50-120	3		30
Cl2-BZ#8	87		84		50-120	4		30
Cl3-BZ#18	89		84		50-120	6		30
Cl3-BZ#28	89		85		50-120	5		30
Cl4-BZ#44	92		86		50-120	7		30
Cl4-BZ#49	88		83		50-120	6		30
Cl4-BZ#52	90		84		50-120	7		30
Cl4-BZ#66	90		84		50-120	7		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 05 Batch: WG1037293-2 WG1037293-3								
Cl5-BZ#87	92		86		50-120	7		30
Cl5-BZ#101	93		87		50-120	7		30
Cl5-BZ#105	95		88		50-120	8		30
Cl5-BZ#118	90		83		50-120	8		30
Cl6-BZ#128	93		86		50-120	8		30
Cl6-BZ#138	92		85		50-120	8		30
Cl6-BZ#153	92		86		50-120	7		30
Cl7-BZ#170	92		87		50-120	6		30
Cl7-BZ#180	91		85		50-120	7		30
Cl7-BZ#183	87		81		50-120	7		30
Cl7-BZ#184	91		85		50-120	7		30
Cl7-BZ#187	94		89		50-120	5		30
Cl8-BZ#195	93		86		50-120	8		30
Cl9-BZ#206	90		84		50-120	7		30
Cl10-BZ#209	95		89		50-120	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	74		73		30-150
Pyrene-d10	83		80		30-150
Benzo(b)fluoranthene-d12	88		83		30-150
DBOB	94		88		30-150
BZ 198	89		81		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033334-6 WG1033334-7 QC Sample: L1728049-16 Client ID: NHH-B												
Naphthalene	ND	332	155	47	Q	164	47	Q	50-120	6		30
Acenaphthylene	ND	332	158	48	Q	169	48	Q	50-120	7		30
Acenaphthene	ND	332	152	46	Q	162	46	Q	50-120	6		30
Fluorene	ND	332	159	48	Q	172	49	Q	50-120	8		30
Phenanthrene	ND	332	154	46	Q	166	48	Q	50-120	8		30
Anthracene	ND	332	177	53		190	54		50-120	7		30
Fluoranthene	ND	332	167	50		177	51		50-120	6		30
Pyrene	ND	332	181	55		193	55		50-120	6		30
Benz(a)anthracene	ND	332	178	54		194	56		50-120	9		30
Chrysene	ND	332	180	54		190	54		50-120	5		30
Benzo(b)fluoranthene	ND	332	188	57		197	56		50-120	5		30
Benzo(k)fluoranthene	ND	332	171	52		178	51		50-120	4		30
Benzo(a)pyrene	ND	332	181	55		191	55		50-120	5		30
Indeno(1,2,3-cd)Pyrene	ND	332	177	53		185	53		50-120	4		30
Dibenz(a,h)anthracene	ND	332	172	52		180	52		50-120	5		30
Benzo(ghi)perylene	ND	332	180	54		190	54		50-120	5		30
Cl2-BZ#8	ND	66.4	40.0	60		43.7	63		50-120	9		30
Cl3-BZ#18	ND	66.4	37.9	57		40.8	58		50-120	7		30
Cl3-BZ#28	ND	66.4	38.1	57		41.5	59		50-120	9		30
Cl4-BZ#44	ND	66.4	40.1	60		42.7	61		50-120	6		30
Cl4-BZ#49	ND	66.4	39.8	60		42.7	61		50-120	7		30
Cl4-BZ#52	ND	66.4	38.2	58		41.3	59		50-120	8		30
Cl4-BZ#66	ND	66.4	40.0	60		42.8	61		50-120	7		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033334-6 WG1033334-7 QC Sample: L1728049-16 Client ID: NHH-B												
CI5-BZ#87	ND	66.4	39.4	59		42.3	61		50-120	7		30
CI5-BZ#101	ND	66.4	38.2	58		41.1	59		50-120	7		30
CI5-BZ#105	ND	66.4	38.6	58		41.9	60		50-120	8		30
CI5-BZ#118	ND	66.4	38.8	59		41.7	60		50-120	7		30
CI6-BZ#128	ND	66.4	38.3	58		41.3	59		50-120	8		30
CI6-BZ#138	ND	66.4	38.8	59		41.4	59		50-120	6		30
CI6-BZ#153	ND	66.4	40.3	61		42.9	61		50-120	6		30
CI7-BZ#170	ND	66.4	37.4	56		40.0	57		50-120	7		30
CI7-BZ#180	ND	66.4	37.8	57		41.1	59		50-120	8		30
CI7-BZ#183	ND	66.4	36.8	56		39.3	56		50-120	7		30
CI7-BZ#184	ND	66.4	38.2	58		40.3	58		50-120	5		30
CI7-BZ#187	ND	66.4	37.8	57		40.1	57		50-120	6		30
CI8-BZ#195	ND	66.4	36.9	56		39.1	56		50-120	6		30
CI9-BZ#206	ND	66.4	36.8	56		39.8	57		50-120	8		30
CI10-BZ#209	ND	66.4	39.0	59		42.3	61		50-120	8		30

Surrogate	MS % Recovery	MSD % Recovery	Acceptance Criteria
2-Methylnaphthalene-d10	46	45	30-150
BZ 198	59	56	30-150
Benzo(b)fluoranthene-d12	50	49	30-150
DBOB	58	62	30-150
Pyrene-d10	55	54	30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033339-6 WG1033339-7 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM												
Naphthalene	116	523	428	60		422	56		50-120	1		30
Acenaphthylene	60.7	523	426	70		429	67		50-120	1		30
Acenaphthene	24.0	523	365	65		362	62		50-120	1		30
Fluorene	36.3	523	392	68		379	62		50-120	3		30
Phenanthrene	234	523	596	69		555	59		50-120	7		30
Anthracene	67.1	523	420	67		428	66		50-120	2		30
Fluoranthene	457	523	784	63		683	41	Q	50-120	14		30
Pyrene	469	523	812	66		737	49	Q	50-120	10		30
Benz(a)anthracene	243	523	623	73		587	63		50-120	6		30
Chrysene	263	523	620	68		620	65		50-120	0		30
Benzo(b)fluoranthene	323	523	713	75		628	56		50-120	13		30
Benzo(k)fluoranthene	184	523	513	63		464	51		50-120	10		30
Benzo(a)pyrene	235	523	597	69		599	66		50-120	0		30
Indeno(1,2,3-cd)Pyrene	194	523	558	70		569	68		50-120	2		30
Dibenz(a,h)anthracene	49.3	523	405	68		422	68		50-120	4		30
Benzo(ghi)perylene	229	523	590	69		577	63		50-120	2		30
Cl2-BZ#8	ND	105	96.3	92		99.3	90		50-120	3		30
Cl3-BZ#18	ND	105	94.0	90		92.6	84		50-120	2		30
Cl3-BZ#28	ND	105	106	101		96.7	88		50-120	9		30
Cl4-BZ#44	ND	105	93.2	89		99.7	91		50-120	7		30
Cl4-BZ#49	ND	105	83.2	80		86.8	79		50-120	4		30
Cl4-BZ#52	ND	105	110	105		112	102		50-120	2		30
Cl4-BZ#66	ND	105	96.8	93		99.2	90		50-120	2		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033339-6 WG1033339-7 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM												
CI5-BZ#87	ND	105	99.4	95		111	101		50-120	11		30
CI5-BZ#101	2.06	105	102	96		102	91		50-120	0		30
CI5-BZ#105	ND	105	93.4	89		94.0	86		50-120	1		30
CI5-BZ#118	3.80	105	99.0	91		103	90		50-120	4		30
CI6-BZ#128	ND	105	91.5	87		95.9	87		50-120	5		30
CI6-BZ#138	2.95	105	99.0	92		103	91		50-120	4		30
CI6-BZ#153	2.87	105	105	98		109	97		50-120	4		30
CI7-BZ#170	0.605J	105	95.3	91		98.2	89		50-120	3		30
CI7-BZ#180	2.20	105	93.5	87		95.3	85		50-120	2		30
CI7-BZ#183	0.692J	105	84.2	80		88.0	80		50-120	4		30
CI7-BZ#184	ND	105	89.8	86		94.0	86		50-120	5		30
CI7-BZ#187	1.78	105	100	94		102	91		50-120	2		30
CI8-BZ#195	ND	105	94.1	90		97.0	88		50-120	3		30
CI9-BZ#206	2.28	105	96.4	90		99.4	89		50-120	3		30
CI10-BZ#209	3.23	105	101	93		105	93		50-120	4		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		58		30-150
BZ 198	103		97		30-150
Benzo(b)fluoranthene-d12	67		62		30-150
DBOB	95		94		30-150
Pyrene-d10	68		68		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab NHH-L Associated sample(s): 05 QC Batch ID: WG1037293-6 WG1037293-7 QC Sample: L1728049-05 Client ID:												
Naphthalene	532	526	1030	95		966	79		50-120	6		30
Acenaphthylene	109	526	580	90		552	81		50-120	5		30
Acenaphthene	38.4	526	467	82		465	78		50-120	0		30
Fluorene	53.1	526	505	86		501	82		50-120	1		30
Phenanthrene	370	526	920	105		849	87		50-120	8		30
Anthracene	148	526	578	82		557	75		50-120	4		30
Fluoranthene	900	526	1460	107		1410	93		50-120	3		30
Pyrene	929	526	1480	105		1340	75		50-120	10		30
Benz(a)anthracene	565	526	1200	121	Q	1100	98		50-120	9		30
Chrysene	589	526	1130	103		1040	82		50-120	8		30
Benzo(b)fluoranthene	566	526	1140	109		1030	85		50-120	10		30
Benzo(k)fluoranthene	404	526	925	99		844	80		50-120	9		30
Benzo(a)pyrene	570	526	1140	108		1020	82		50-120	11		30
Indeno(1,2,3-cd)Pyrene	365	526	934	108		816	82		50-120	13		30
Dibenz(a,h)anthracene	85.1	526	623	102		574	89		50-120	8		30
Benzo(ghi)perylene	446	526	1030	111		912	85		50-120	12		30
Cl2-BZ#8	ND	105	90.1	86		95.7	87		50-120	6		30
Cl3-BZ#18	ND	105	92.8	88		98.5	90		50-120	6		30
Cl3-BZ#28	ND	105	100	95		97.4	89		50-120	3		30
Cl4-BZ#44	ND	105	94.8	90		102	93		50-120	7		30
Cl4-BZ#49	ND	105	84.6	81		88.8	81		50-120	5		30
Cl4-BZ#52	ND	105	106	101		108	99		50-120	2		30
Cl4-BZ#66	ND	105	94.1	90		98.5	90		50-120	5		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab NHH-L Associated sample(s): 05 QC Batch ID: WG1037293-6 WG1037293-7 QC Sample: L1728049-05 Client ID:												
CI5-BZ#87	ND	105	94.8	90		99.3	91		50-120	5		30
CI5-BZ#101	ND	105	96.4	92		101	92		50-120	5		30
CI5-BZ#105	ND	105	92.9	88		97.3	89		50-120	5		30
CI5-BZ#118	0.621J	105	95.4	91		99.3	91		50-120	4		30
CI6-BZ#128	ND	105	92.6	88		96.6	88		50-120	4		30
CI6-BZ#138	ND	105	96.5	92		100	91		50-120	4		30
CI6-BZ#153	ND	105	92.5	88		97.2	89		50-120	5		30
CI7-BZ#170	ND	105	102	97		106	97		50-120	4		30
CI7-BZ#180	ND	105	96.2	92		99.9	91		50-120	4		30
CI7-BZ#183	ND	105	87.3	83		89.8	82		50-120	3		30
CI7-BZ#184	ND	105	96.0	91		98.6	90		50-120	3		30
CI7-BZ#187	ND	105	108	103		113	103		50-120	5		30
CI8-BZ#195	ND	105	101	96		106	97		50-120	5		30
CI9-BZ#206	0.945J	105	103	98		108	99		50-120	5		30
CI10-BZ#209	0.760J	105	107	102		112	102		50-120	5		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	83		78		30-150
BZ 198	93		94		30-150
Benzo(b)fluoranthene-d12	84		84		30-150
DBOB	98		97		30-150
Pyrene-d10	87		89		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033334-5 QC Sample: L1728049-16 Client ID: NHH-B						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	ND	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	ND	ND	ug/kg	NC		30
Pyrene	ND	ND	ug/kg	NC		30
Benz(a)anthracene	ND	ND	ug/kg	NC		30
Chrysene	ND	ND	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	ND	ND	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033334-5 QC Sample: L1728049-16 Client ID: NHH-B						
CI4-BZ#52	ND	ND	ug/kg	NC		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	ND	ND	ug/kg	NC		30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	ND	ND	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	ND	ND	ug/kg	NC		30
CI6-BZ#153	ND	ND	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	53		51		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033334-5 QC Sample: L1728049-16 Client ID: NHH-B						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	56		59		30-150
Benzo(b)fluoranthene-d12	50		53		30-150
DBOB	62		64		30-150
BZ 198	57		61		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033339-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Naphthalene	116	116	ug/kg	0	Q	30
Acenaphthylene	60.7	84.0	ug/kg	32		30
Acenaphthene	24.0	30.0	ug/kg	22		30
Fluorene	36.3	42.0	ug/kg	15		30
Phenanthrene	234	216	ug/kg	8		30
Anthracene	67.1	87.9	ug/kg	27		30
Fluoranthene	457	448	ug/kg	2		30
Pyrene	469	438	ug/kg	7		30
Benz(a)anthracene	243	204	ug/kg	17		30
Chrysene	263	294	ug/kg	11		30
Benzo(b)fluoranthene	323	288	ug/kg	11		30
Benzo(k)fluoranthene	184	233	ug/kg	24		30
Benzo(a)pyrene	235	268	ug/kg	13		30
Indeno(1,2,3-cd)Pyrene	194	202	ug/kg	4		30
Dibenz(a,h)anthracene	49.3	61.3	ug/kg	22		30
Benzo(ghi)perylene	229	232	ug/kg	1		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033339-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
CI4-BZ#52	ND	ND	ug/kg	NC		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	2.06	2.94	ug/kg	35	Q	30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	3.80	4.37	ug/kg	14		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	2.95	3.51	ug/kg	17		30
CI6-BZ#153	2.87	3.50	ug/kg	20		30
CI7-BZ#170	0.605J	0.675J	ug/kg	NC		30
CI7-BZ#180	2.20	2.12	ug/kg	4		30
CI7-BZ#183	0.692J	1.00J	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	1.78	2.46	ug/kg	32	Q	30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	2.28	2.28	ug/kg	0		30
CI10-BZ#209	3.23	3.14	ug/kg	3		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	66		65		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033339-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	68		69		30-150
Benzo(b)fluoranthene-d12	66		65		30-150
DBOB	99		103		30-150
BZ 198	99		102		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037293-5 QC Sample: L1728049-05 Client ID: NHH-L						
Naphthalene	532	580	ug/kg	9		30
Acenaphthylene	109	156	ug/kg	35	Q	30
Acenaphthene	38.4	45.8	ug/kg	18		30
Fluorene	53.1	65.5	ug/kg	21		30
Phenanthrene	370	448	ug/kg	19		30
Anthracene	148	191	ug/kg	25		30
Fluoranthene	900	1070	ug/kg	17		30
Pyrene	929	1060	ug/kg	13		30
Benz(a)anthracene	565	680	ug/kg	18		30
Chrysene	589	722	ug/kg	20		30
Benzo(b)fluoranthene	566	718	ug/kg	24		30
Benzo(k)fluoranthene	404	509	ug/kg	23		30
Benzo(a)pyrene	570	714	ug/kg	22		30
Indeno(1,2,3-cd)Pyrene	365	478	ug/kg	27		30
Dibenz(a,h)anthracene	85.1	114	ug/kg	29		30
Benzo(ghi)perylene	446	581	ug/kg	26		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037293-5 QC Sample: L1728049-05 Client ID: NHH-L						
Cl4-BZ#52	ND	ND	ug/kg	NC		30
Cl4-BZ#66	ND	ND	ug/kg	NC		30
Cl5-BZ#87	ND	ND	ug/kg	NC		30
Cl5-BZ#101	ND	ND	ug/kg	NC		30
Cl5-BZ#105	ND	ND	ug/kg	NC		30
Cl5-BZ#118	0.621J	0.748J	ug/kg	NC		30
Cl6-BZ#128	ND	ND	ug/kg	NC		30
Cl6-BZ#138	ND	ND	ug/kg	NC		30
Cl6-BZ#153	ND	ND	ug/kg	NC		30
Cl7-BZ#170	ND	ND	ug/kg	NC		30
Cl7-BZ#180	ND	ND	ug/kg	NC		30
Cl7-BZ#183	ND	ND	ug/kg	NC		30
Cl7-BZ#184	ND	ND	ug/kg	NC		30
Cl7-BZ#187	ND	ND	ug/kg	NC		30
Cl8-BZ#195	ND	ND	ug/kg	NC		30
Cl9-BZ#206	0.945J	1.22	ug/kg	NC		30
Cl10-BZ#209	0.760J	0.732J	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	74		75		30-150
Pyrene-d10	82		82		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037293-5 QC Sample: L1728049-05 Client ID: NHH-L						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Benzo(b)fluoranthene-d12	78		79		30-150
DBOB	94		92		30-150
BZ 198	93		88		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1033334-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	56		40-140
Fluoranthene	54		40-140
Pyrene	50		40-140
Benz(a)anthracene	55		40-140
Chrysene	64		40-140
Benzo(b)fluoranthene	62		40-140
Benzo(k)fluoranthene	80		40-140
Benzo(a)pyrene	41		40-140
Indeno(1,2,3-cd)Pyrene	52		40-140
Dibenz(a,h)anthracene	88		40-140
Benzo(ghi)perylene	55		40-140
Cl2-BZ#8	56		40-140
Cl3-BZ#18	81		40-140
Cl3-BZ#28	39	Q	40-140
Cl4-BZ#44	68		40-140
Cl4-BZ#49	56		40-140
Cl4-BZ#52	60		40-140
Cl4-BZ#66	46		40-140
Cl5-BZ#87	60		40-140
Cl5-BZ#101	62		40-140
Cl5-BZ#105	66		40-140
Cl5-BZ#118	60		40-140
Cl6-BZ#128	119		40-140
Cl6-BZ#138	72		40-140
Cl6-BZ#153	51		40-140
Cl7-BZ#170	51		40-140
Cl7-BZ#180	65		40-140
Cl7-BZ#183	53		40-140
Cl7-BZ#187	69		40-140
Cl9-BZ#206	61		40-140
Cl10-BZ#209	84		40-140
2-Methylnaphthalene-d10 (Surrogate)	54		30-150
Pyrene-d10 (Surrogate)	60		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	56		30-150
DBOB (Surrogate)	69		30-150
BZ 198 (Surrogate)	70		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1033339-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	78		40-140
Fluoranthene	72		40-140
Pyrene	62		40-140
Benz(a)anthracene	79		40-140
Chrysene	92		40-140
Benzo(b)fluoranthene	77		40-140
Benzo(k)fluoranthene	121		40-140
Benzo(a)pyrene	62		40-140
Indeno(1,2,3-cd)Pyrene	70		40-140
Dibenz(a,h)anthracene	140		40-140
Benzo(ghi)perylene	80		40-140
Cl2-BZ#8	124		40-140
Cl3-BZ#18	84		40-140
Cl3-BZ#28	56		40-140
Cl4-BZ#44	107		40-140
Cl4-BZ#49	74		40-140
Cl4-BZ#52	71		40-140
Cl4-BZ#66	68		40-140
Cl5-BZ#87	90		40-140
Cl5-BZ#101	86		40-140
Cl5-BZ#105	106		40-140
Cl5-BZ#118	72		40-140
Cl6-BZ#128	99		40-140
Cl6-BZ#138	110		40-140
Cl6-BZ#153	68		40-140
Cl7-BZ#170	91		40-140
Cl7-BZ#180	86		40-140
Cl7-BZ#183	81		40-140
Cl7-BZ#187	104		40-140
Cl9-BZ#206	100		40-140
Cl10-BZ#209	232	Q	40-140
2-Methylnaphthalene-d10 (Surrogate)	74		30-150
Pyrene-d10 (Surrogate)	86		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	72		30-150
DBOB (Surrogate)	105		30-150
BZ 198 (Surrogate)	91		30-150



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1037293-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	70		40-140
Fluoranthene	66		40-140
Pyrene	57		40-140
Benz(a)anthracene	64		40-140
Chrysene	80		40-140
Benzo(b)fluoranthene	77		40-140
Benzo(k)fluoranthene	90		40-140
Benzo(a)pyrene	55		40-140
Indeno(1,2,3-cd)Pyrene	67		40-140
Dibenz(a,h)anthracene	109		40-140
Benzo(ghi)perylene	69		40-140
Cl2-BZ#8	77		40-140
Cl3-BZ#18	87		40-140
Cl3-BZ#28	65		40-140
Cl4-BZ#44	98		40-140
Cl4-BZ#49	65		40-140
Cl4-BZ#52	92		40-140
Cl4-BZ#66	58		40-140
Cl5-BZ#87	72		40-140
Cl5-BZ#101	76		40-140
Cl5-BZ#105	76		40-140
Cl5-BZ#118	70		40-140
Cl6-BZ#128	133		40-140
Cl6-BZ#138	92		40-140
Cl6-BZ#153	57		40-140
Cl7-BZ#170	70		40-140
Cl7-BZ#180	68		40-140
Cl7-BZ#183	59		40-140
Cl7-BZ#187	76		40-140
Cl9-BZ#206	70		40-140
Cl10-BZ#209	71		40-140
2-Methylnaphthalene-d10 (Surrogate)	80		30-150
Pyrene-d10 (Surrogate)	85		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	78		30-150
DBOB (Surrogate)	100		30-150
BZ 198 (Surrogate)	82		30-150



PESTICIDES

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-01
Client ID: NHH-R-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 22:09
Analyst: DP
Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.28	1.28	1	A
gamma-BHC	ND		ug/kg	0.640	0.640	1	A
Heptachlor	ND		ug/kg	0.640	0.640	1	A
Aldrin	ND		ug/kg	0.640	0.640	1	A
Heptachlor epoxide	ND		ug/kg	1.28	1.28	1	B
Oxychlordane	ND		ug/kg	1.28	1.28	1	B
trans-Chlordane	8.52	P	ug/kg	0.640	0.640	1	A
Endosulfan I	ND		ug/kg	0.640	0.640	1	A
cis-Chlordane	0.792		ug/kg	0.640	0.640	1	A
trans-Nonachlor	1.12		ug/kg	0.640	0.640	1	A
4,4'-DDE	2.20		ug/kg	0.640	0.640	1	B
Dieldrin	0.754	IP	ug/kg	0.640	0.640	1	A
Endrin	ND		ug/kg	0.640	0.640	1	A
Endosulfan II	2.20	P	ug/kg	0.640	0.640	1	A
4,4'-DDD	1.19		ug/kg	0.640	0.640	1	A
cis-Nonachlor	ND		ug/kg	0.640	0.640	1	A
4,4'-DDT	1.92		ug/kg	0.640	0.640	1	B
Methoxychlor	ND		ug/kg	6.40	6.40	1	A
Toxaphene	ND		ug/kg	32.1	32.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	78		30-150	A
DBOB	59		30-150	B
BZ 198	84		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-02
Client ID: NHH-R-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 20:26
Analyst: DP
Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.05	1.05	1	A
gamma-BHC	ND		ug/kg	0.524	0.524	1	A
Heptachlor	ND		ug/kg	0.524	0.524	1	A
Aldrin	ND		ug/kg	0.524	0.524	1	A
Heptachlor epoxide	ND		ug/kg	1.05	1.05	1	B
Oxychlordane	ND		ug/kg	1.05	1.05	1	B
trans-Chlordane	13.3	P	ug/kg	0.524	0.524	1	A
Endosulfan I	ND		ug/kg	0.524	0.524	1	A
cis-Chlordane	0.855	P	ug/kg	0.524	0.524	1	A
trans-Nonachlor	1.36	P	ug/kg	0.524	0.524	1	A
4,4'-DDE	2.71		ug/kg	0.524	0.524	1	A
Dieldrin	0.752	IP	ug/kg	0.524	0.524	1	A
Endrin	ND		ug/kg	0.524	0.524	1	A
Endosulfan II	3.31	P	ug/kg	0.524	0.524	1	A
4,4'-DDD	1.18		ug/kg	0.524	0.524	1	A
cis-Nonachlor	ND		ug/kg	0.524	0.524	1	A
4,4'-DDT	2.57		ug/kg	0.524	0.524	1	B
Methoxychlor	ND		ug/kg	5.24	5.24	1	A
Toxaphene	ND		ug/kg	26.3	26.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	66		30-150	A
DBOB	53		30-150	B
BZ 198	67		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-03
Client ID: NHH-S-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 09:55
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 21:00
Analyst: DP
Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.18	1.18	1	A
gamma-BHC	ND		ug/kg	0.593	0.593	1	A
Heptachlor	ND		ug/kg	0.593	0.593	1	A
Aldrin	ND		ug/kg	0.593	0.593	1	A
Heptachlor epoxide	ND		ug/kg	1.18	1.18	1	B
Oxychlordane	ND		ug/kg	1.18	1.18	1	B
trans-Chlordane	ND		ug/kg	0.593	0.593	1	A
Endosulfan I	ND		ug/kg	0.593	0.593	1	A
cis-Chlordane	1.30		ug/kg	0.593	0.593	1	A
trans-Nonachlor	2.55		ug/kg	0.593	0.593	1	B
4,4'-DDE	8.16		ug/kg	0.593	0.593	1	A
Dieldrin	3.24	IP	ug/kg	0.593	0.593	1	A
Endrin	ND		ug/kg	0.593	0.593	1	A
Endosulfan II	11.4	P	ug/kg	0.593	0.593	1	A
4,4'-DDD	1.72		ug/kg	0.593	0.593	1	A
cis-Nonachlor	ND		ug/kg	0.593	0.593	1	A
4,4'-DDT	14.4	P	ug/kg	0.593	0.593	1	B
Methoxychlor	ND		ug/kg	5.93	5.93	1	A
Toxaphene	ND		ug/kg	29.8	29.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	76		30-150	A
DBOB	51		30-150	B
BZ 198	82		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-04
Client ID: NHH-J
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 11:41
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 21:34
Analyst: DP
Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.20	1.20	1	A
gamma-BHC	ND		ug/kg	0.599	0.599	1	A
Heptachlor	ND		ug/kg	0.599	0.599	1	A
Aldrin	ND		ug/kg	0.599	0.599	1	A
Heptachlor epoxide	ND		ug/kg	1.20	1.20	1	B
Oxychlordane	ND		ug/kg	1.20	1.20	1	B
trans-Chlordane	ND		ug/kg	0.599	0.599	1	A
Endosulfan I	ND		ug/kg	0.599	0.599	1	A
cis-Chlordane	ND		ug/kg	0.599	0.599	1	A
trans-Nonachlor	1.06		ug/kg	0.599	0.599	1	B
4,4'-DDE	3.57		ug/kg	0.599	0.599	1	A
Dieldrin	1.04	IP	ug/kg	0.599	0.599	1	A
Endrin	ND		ug/kg	0.599	0.599	1	A
Endosulfan II	4.03	P	ug/kg	0.599	0.599	1	A
4,4'-DDD	1.17		ug/kg	0.599	0.599	1	A
cis-Nonachlor	ND		ug/kg	0.599	0.599	1	A
4,4'-DDT	3.84	P	ug/kg	0.599	0.599	1	B
Methoxychlor	ND		ug/kg	5.99	5.99	1	A
Toxaphene	ND		ug/kg	30.1	30.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	73		30-150	A
DBOB	54		30-150	B
BZ 198	84		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-05
Client ID: NHH-L
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 13:00
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/31/17 09:30
Cleanup Method: EPA 3630
Cleanup Date: 09/01/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 09/05/17 18:31
Analyst: DP
Percent Solids: 46%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.03	1.03	1	A
gamma-BHC	ND		ug/kg	0.517	0.517	1	A
Heptachlor	ND		ug/kg	0.517	0.517	1	A
Aldrin	ND		ug/kg	0.517	0.517	1	A
Heptachlor epoxide	ND		ug/kg	1.03	1.03	1	B
Oxychlordane	ND		ug/kg	1.03	1.03	1	B
trans-Chlordane	ND		ug/kg	0.517	0.517	1	A
Endosulfan I	ND		ug/kg	0.517	0.517	1	A
cis-Chlordane	ND		ug/kg	0.517	0.517	1	A
trans-Nonachlor	ND		ug/kg	0.517	0.517	1	A
4,4'-DDE	ND		ug/kg	0.517	0.517	1	A
Dieldrin	ND		ug/kg	0.517	0.517	1	A
Endrin	ND		ug/kg	0.517	0.517	1	A
Endosulfan II	ND		ug/kg	0.517	0.517	1	A
4,4'-DDD	ND		ug/kg	0.517	0.517	1	A
cis-Nonachlor	ND		ug/kg	0.517	0.517	1	A
4,4'-DDT	ND		ug/kg	0.517	0.517	1	A
Methoxychlor	ND		ug/kg	5.17	5.17	1	A
Toxaphene	ND		ug/kg	26.0	26.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	62		30-150	A
BZ 198	84		30-150	A
DBOB	54		30-150	B
BZ 198	87		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-06
Client ID: NHH-K-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:09
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 22:43
Analyst: DP
Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.03	1.03	1	A
gamma-BHC	ND		ug/kg	0.516	0.516	1	A
Heptachlor	ND		ug/kg	0.516	0.516	1	A
Aldrin	ND		ug/kg	0.516	0.516	1	A
Heptachlor epoxide	ND		ug/kg	1.03	1.03	1	B
Oxychlordane	ND		ug/kg	1.03	1.03	1	B
trans-Chlordane	ND		ug/kg	0.516	0.516	1	A
Endosulfan I	ND		ug/kg	0.516	0.516	1	A
cis-Chlordane	ND		ug/kg	0.516	0.516	1	A
trans-Nonachlor	ND		ug/kg	0.516	0.516	1	A
4,4'-DDE	1.18		ug/kg	0.516	0.516	1	B
Dieldrin	ND		ug/kg	0.516	0.516	1	A
Endrin	ND		ug/kg	0.516	0.516	1	A
Endosulfan II	ND		ug/kg	0.516	0.516	1	A
4,4'-DDD	0.572		ug/kg	0.516	0.516	1	A
cis-Nonachlor	ND		ug/kg	0.516	0.516	1	A
4,4'-DDT	0.743		ug/kg	0.516	0.516	1	B
Methoxychlor	ND		ug/kg	5.16	5.16	1	A
Toxaphene	ND		ug/kg	25.9	25.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	73		30-150	A
BZ 198	79		30-150	A
DBOB	64		30-150	B
BZ 198	82		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-07
Client ID: NHH-H-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 23:17
Analyst: DP
Percent Solids: 49%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.02	1.02	1	A
gamma-BHC	ND		ug/kg	0.509	0.509	1	A
Heptachlor	ND		ug/kg	0.509	0.509	1	A
Aldrin	ND		ug/kg	0.509	0.509	1	A
Heptachlor epoxide	ND		ug/kg	1.02	1.02	1	B
Oxychlordane	ND		ug/kg	1.02	1.02	1	B
trans-Chlordane	ND		ug/kg	0.509	0.509	1	A
Endosulfan I	ND		ug/kg	0.509	0.509	1	A
cis-Chlordane	ND		ug/kg	0.509	0.509	1	A
trans-Nonachlor	ND		ug/kg	0.509	0.509	1	A
4,4'-DDE	2.28		ug/kg	0.509	0.509	1	A
Dieldrin	0.514	IP	ug/kg	0.509	0.509	1	A
Endrin	ND		ug/kg	0.509	0.509	1	A
Endosulfan II	ND		ug/kg	0.509	0.509	1	A
4,4'-DDD	0.688		ug/kg	0.509	0.509	1	A
cis-Nonachlor	ND		ug/kg	0.509	0.509	1	A
4,4'-DDT	1.73	P	ug/kg	0.509	0.509	1	B
Methoxychlor	ND		ug/kg	5.09	5.09	1	A
Toxaphene	ND		ug/kg	25.6	25.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	68		30-150	A
DBOB	48		30-150	B
BZ 198	74		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-08
Client ID: NHH-H-REP-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/30/17 23:51
Analyst: DP
Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.979	0.979	1	A
gamma-BHC	ND		ug/kg	0.490	0.490	1	A
Heptachlor	ND		ug/kg	0.490	0.490	1	A
Aldrin	ND		ug/kg	0.490	0.490	1	A
Heptachlor epoxide	ND		ug/kg	0.979	0.979	1	B
Oxychlordane	ND		ug/kg	0.979	0.979	1	B
trans-Chlordane	ND		ug/kg	0.490	0.490	1	A
Endosulfan I	ND		ug/kg	0.490	0.490	1	A
cis-Chlordane	ND		ug/kg	0.490	0.490	1	A
trans-Nonachlor	ND		ug/kg	0.490	0.490	1	A
4,4'-DDE	2.97		ug/kg	0.490	0.490	1	A
Dieldrin	0.582	IP	ug/kg	0.490	0.490	1	A
Endrin	ND		ug/kg	0.490	0.490	1	A
Endosulfan II	ND		ug/kg	0.490	0.490	1	A
4,4'-DDD	1.05		ug/kg	0.490	0.490	1	A
cis-Nonachlor	ND		ug/kg	0.490	0.490	1	A
4,4'-DDT	2.34	P	ug/kg	0.490	0.490	1	B
Methoxychlor	ND		ug/kg	4.90	4.90	1	A
Toxaphene	ND		ug/kg	24.6	24.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	75		30-150	A
DBOB	62		30-150	B
BZ 198	81		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-09
Client ID: NHH-H-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 00:25
Analyst: DP
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.686	0.686	1	A
gamma-BHC	ND		ug/kg	0.343	0.343	1	A
Heptachlor	ND		ug/kg	0.343	0.343	1	A
Aldrin	ND		ug/kg	0.343	0.343	1	A
Heptachlor epoxide	ND		ug/kg	0.686	0.686	1	B
Oxychlordane	ND		ug/kg	0.686	0.686	1	B
trans-Chlordane	ND		ug/kg	0.343	0.343	1	A
Endosulfan I	ND		ug/kg	0.343	0.343	1	A
cis-Chlordane	ND		ug/kg	0.343	0.343	1	A
trans-Nonachlor	ND		ug/kg	0.343	0.343	1	A
4,4'-DDE	ND		ug/kg	0.343	0.343	1	A
Dieldrin	ND		ug/kg	0.343	0.343	1	A
Endrin	ND		ug/kg	0.343	0.343	1	A
Endosulfan II	ND		ug/kg	0.343	0.343	1	A
4,4'-DDD	ND		ug/kg	0.343	0.343	1	A
cis-Nonachlor	ND		ug/kg	0.343	0.343	1	A
4,4'-DDT	ND		ug/kg	0.343	0.343	1	A
Methoxychlor	ND		ug/kg	3.43	3.43	1	A
Toxaphene	ND		ug/kg	17.2	17.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	69		30-150	A
BZ 198	80		30-150	A
DBOB	63		30-150	B
BZ 198	88		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-10
Client ID: NHH-I-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 00:59
Analyst: DP
Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.961	0.961	1	A
gamma-BHC	ND		ug/kg	0.480	0.480	1	A
Heptachlor	ND		ug/kg	0.480	0.480	1	A
Aldrin	ND		ug/kg	0.480	0.480	1	A
Heptachlor epoxide	ND		ug/kg	0.961	0.961	1	B
Oxychlordane	ND		ug/kg	0.961	0.961	1	B
trans-Chlordane	ND		ug/kg	0.480	0.480	1	A
Endosulfan I	ND		ug/kg	0.480	0.480	1	A
cis-Chlordane	ND		ug/kg	0.480	0.480	1	A
trans-Nonachlor	ND		ug/kg	0.480	0.480	1	A
4,4'-DDE	ND		ug/kg	0.480	0.480	1	A
Dieldrin	ND		ug/kg	0.480	0.480	1	A
Endrin	ND		ug/kg	0.480	0.480	1	A
Endosulfan II	ND		ug/kg	0.480	0.480	1	A
4,4'-DDD	ND		ug/kg	0.480	0.480	1	A
cis-Nonachlor	ND		ug/kg	0.480	0.480	1	A
4,4'-DDT	ND		ug/kg	0.480	0.480	1	A
Methoxychlor	ND		ug/kg	4.80	4.80	1	A
Toxaphene	ND		ug/kg	24.1	24.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	60		30-150	A
BZ 198	71		30-150	A
DBOB	57		30-150	B
BZ 198	81		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-11
Client ID: NHH-I-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 19:23
Analyst: DP
Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.00	1.00	1	A
gamma-BHC	ND		ug/kg	0.503	0.503	1	A
Heptachlor	ND		ug/kg	0.503	0.503	1	A
Aldrin	ND		ug/kg	0.503	0.503	1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	1	B
Oxychlordane	ND		ug/kg	1.00	1.00	1	B
trans-Chlordane	ND		ug/kg	0.503	0.503	1	A
Endosulfan I	ND		ug/kg	0.503	0.503	1	A
cis-Chlordane	ND		ug/kg	0.503	0.503	1	A
trans-Nonachlor	ND		ug/kg	0.503	0.503	1	A
4,4'-DDE	ND		ug/kg	0.503	0.503	1	A
Dieldrin	ND		ug/kg	0.503	0.503	1	A
Endrin	ND		ug/kg	0.503	0.503	1	A
Endosulfan II	ND		ug/kg	0.503	0.503	1	A
4,4'-DDD	ND		ug/kg	0.503	0.503	1	A
cis-Nonachlor	ND		ug/kg	0.503	0.503	1	A
4,4'-DDT	ND		ug/kg	0.503	0.503	1	A
Methoxychlor	ND		ug/kg	5.03	5.03	1	A
Toxaphene	ND		ug/kg	25.2	25.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	55		30-150	A
BZ 198	71		30-150	A
DBOB	51		30-150	B
BZ 198	76		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-12
Client ID: NHH-G-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 19:57
Analyst: DP
Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.10	1.10	1	A
gamma-BHC	ND		ug/kg	0.551	0.551	1	A
Heptachlor	ND		ug/kg	0.551	0.551	1	A
Aldrin	ND		ug/kg	0.551	0.551	1	A
Heptachlor epoxide	ND		ug/kg	1.10	1.10	1	B
Oxychlordane	ND		ug/kg	1.10	1.10	1	B
trans-Chlordane	ND		ug/kg	0.551	0.551	1	A
Endosulfan I	ND		ug/kg	0.551	0.551	1	A
cis-Chlordane	ND		ug/kg	0.551	0.551	1	A
trans-Nonachlor	ND		ug/kg	0.551	0.551	1	A
4,4'-DDE	1.56		ug/kg	0.551	0.551	1	A
Dieldrin	ND		ug/kg	0.551	0.551	1	A
Endrin	ND		ug/kg	0.551	0.551	1	A
Endosulfan II	ND		ug/kg	0.551	0.551	1	A
4,4'-DDD	0.580		ug/kg	0.551	0.551	1	B
cis-Nonachlor	ND		ug/kg	0.551	0.551	1	A
4,4'-DDT	ND		ug/kg	0.551	0.551	1	A
Methoxychlor	ND		ug/kg	5.51	5.51	1	A
Toxaphene	ND		ug/kg	27.6	27.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	50		30-150	A
BZ 198	63		30-150	A
DBOB	45		30-150	B
BZ 198	69		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-13
Client ID: NHH-G-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 20:31
Analyst: DP
Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.993	0.993	1	A
gamma-BHC	ND		ug/kg	0.497	0.497	1	A
Heptachlor	ND		ug/kg	0.497	0.497	1	A
Aldrin	ND		ug/kg	0.497	0.497	1	A
Heptachlor epoxide	ND		ug/kg	0.993	0.993	1	B
Oxychlordane	ND		ug/kg	0.993	0.993	1	B
trans-Chlordane	ND		ug/kg	0.497	0.497	1	A
Endosulfan I	ND		ug/kg	0.497	0.497	1	A
cis-Chlordane	ND		ug/kg	0.497	0.497	1	A
trans-Nonachlor	ND		ug/kg	0.497	0.497	1	A
4,4'-DDE	ND		ug/kg	0.497	0.497	1	A
Dieldrin	ND		ug/kg	0.497	0.497	1	A
Endrin	ND		ug/kg	0.497	0.497	1	A
Endosulfan II	ND		ug/kg	0.497	0.497	1	A
4,4'-DDD	ND		ug/kg	0.497	0.497	1	A
cis-Nonachlor	ND		ug/kg	0.497	0.497	1	A
4,4'-DDT	ND		ug/kg	0.497	0.497	1	A
Methoxychlor	ND		ug/kg	4.97	4.97	1	A
Toxaphene	ND		ug/kg	24.9	24.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	49		30-150	A
BZ 198	67		30-150	A
DBOB	45		30-150	B
BZ 198	72		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-14
Client ID: NHH-C-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 21:05
Analyst: DP
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.658	0.658	1	A
gamma-BHC	ND		ug/kg	0.329	0.329	1	A
Heptachlor	ND		ug/kg	0.329	0.329	1	A
Aldrin	ND		ug/kg	0.329	0.329	1	A
Heptachlor epoxide	ND		ug/kg	0.658	0.658	1	B
Oxychlordane	ND		ug/kg	0.658	0.658	1	B
trans-Chlordane	ND		ug/kg	0.329	0.329	1	A
Endosulfan I	ND		ug/kg	0.329	0.329	1	A
cis-Chlordane	ND		ug/kg	0.329	0.329	1	A
trans-Nonachlor	ND		ug/kg	0.329	0.329	1	A
4,4'-DDE	ND		ug/kg	0.329	0.329	1	A
Dieldrin	ND		ug/kg	0.329	0.329	1	A
Endrin	ND		ug/kg	0.329	0.329	1	A
Endosulfan II	ND		ug/kg	0.329	0.329	1	A
4,4'-DDD	ND		ug/kg	0.329	0.329	1	A
cis-Nonachlor	ND		ug/kg	0.329	0.329	1	A
4,4'-DDT	ND		ug/kg	0.329	0.329	1	A
Methoxychlor	ND		ug/kg	3.29	3.29	1	A
Toxaphene	ND		ug/kg	16.5	16.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	55		30-150	A
BZ 198	73		30-150	A
DBOB	50		30-150	B
BZ 198	74		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-15
Client ID: NHH-C-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 21:39
Analyst: DP
Percent Solids: 62%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.757	0.757	1	A
gamma-BHC	ND		ug/kg	0.379	0.379	1	A
Heptachlor	ND		ug/kg	0.379	0.379	1	A
Aldrin	ND		ug/kg	0.379	0.379	1	A
Heptachlor epoxide	ND		ug/kg	0.757	0.757	1	B
Oxychlordane	ND		ug/kg	0.757	0.757	1	B
trans-Chlordane	ND		ug/kg	0.379	0.379	1	A
Endosulfan I	ND		ug/kg	0.379	0.379	1	A
cis-Chlordane	ND		ug/kg	0.379	0.379	1	A
trans-Nonachlor	ND		ug/kg	0.379	0.379	1	A
4,4'-DDE	ND		ug/kg	0.379	0.379	1	A
Dieldrin	ND		ug/kg	0.379	0.379	1	A
Endrin	ND		ug/kg	0.379	0.379	1	A
Endosulfan II	ND		ug/kg	0.379	0.379	1	A
4,4'-DDD	ND		ug/kg	0.379	0.379	1	A
cis-Nonachlor	ND		ug/kg	0.379	0.379	1	A
4,4'-DDT	ND		ug/kg	0.379	0.379	1	A
Methoxychlor	ND		ug/kg	3.79	3.79	1	A
Toxaphene	ND		ug/kg	19.0	19.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	73		30-150	A
DBOB	49		30-150	B
BZ 198	71		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-16
Client ID: NHH-B
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 11:57
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 01:33
Analyst: DP
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.681	0.681	1	A
gamma-BHC	ND		ug/kg	0.340	0.340	1	A
Heptachlor	ND		ug/kg	0.340	0.340	1	A
Aldrin	ND		ug/kg	0.340	0.340	1	A
Heptachlor epoxide	ND		ug/kg	0.681	0.681	1	B
Oxychlordane	ND		ug/kg	0.681	0.681	1	B
trans-Chlordane	ND		ug/kg	0.340	0.340	1	A
Endosulfan I	ND		ug/kg	0.340	0.340	1	A
cis-Chlordane	ND		ug/kg	0.340	0.340	1	A
trans-Nonachlor	ND		ug/kg	0.340	0.340	1	A
4,4'-DDE	ND		ug/kg	0.340	0.340	1	A
Dieldrin	ND		ug/kg	0.340	0.340	1	A
Endrin	ND		ug/kg	0.340	0.340	1	A
Endosulfan II	ND		ug/kg	0.340	0.340	1	A
4,4'-DDD	ND		ug/kg	0.340	0.340	1	A
cis-Nonachlor	ND		ug/kg	0.340	0.340	1	A
4,4'-DDT	ND		ug/kg	0.340	0.340	1	A
Methoxychlor	ND		ug/kg	3.40	3.40	1	A
Toxaphene	ND		ug/kg	17.1	17.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	70		30-150	A
DBOB	64		30-150	B
BZ 198	74		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-17
Client ID: NHH-A-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 22:13
Analyst: DP
Percent Solids: 61%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.806	0.806	1	A
gamma-BHC	ND		ug/kg	0.403	0.403	1	A
Heptachlor	ND		ug/kg	0.403	0.403	1	A
Aldrin	ND		ug/kg	0.403	0.403	1	A
Heptachlor epoxide	ND		ug/kg	0.806	0.806	1	B
Oxychlordane	ND		ug/kg	0.806	0.806	1	B
trans-Chlordane	ND		ug/kg	0.403	0.403	1	A
Endosulfan I	ND		ug/kg	0.403	0.403	1	A
cis-Chlordane	ND		ug/kg	0.403	0.403	1	A
trans-Nonachlor	ND		ug/kg	0.403	0.403	1	A
4,4'-DDE	ND		ug/kg	0.403	0.403	1	A
Dieldrin	ND		ug/kg	0.403	0.403	1	A
Endrin	ND		ug/kg	0.403	0.403	1	A
Endosulfan II	ND		ug/kg	0.403	0.403	1	A
4,4'-DDD	ND		ug/kg	0.403	0.403	1	A
cis-Nonachlor	ND		ug/kg	0.403	0.403	1	A
4,4'-DDT	ND		ug/kg	0.403	0.403	1	A
Methoxychlor	ND		ug/kg	4.03	4.03	1	A
Toxaphene	ND		ug/kg	20.2	20.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		30-150	A
BZ 198	72		30-150	A
DBOB	53		30-150	B
BZ 198	73		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-18
Client ID: NHH-D-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 22:47
Analyst: DP
Percent Solids: 60%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.794	0.794	1	A
gamma-BHC	ND		ug/kg	0.397	0.397	1	A
Heptachlor	ND		ug/kg	0.397	0.397	1	A
Aldrin	ND		ug/kg	0.397	0.397	1	A
Heptachlor epoxide	ND		ug/kg	0.794	0.794	1	B
Oxychlordane	ND		ug/kg	0.794	0.794	1	B
trans-Chlordane	ND		ug/kg	0.397	0.397	1	A
Endosulfan I	ND		ug/kg	0.397	0.397	1	A
cis-Chlordane	ND		ug/kg	0.397	0.397	1	A
trans-Nonachlor	ND		ug/kg	0.397	0.397	1	A
4,4'-DDE	ND		ug/kg	0.397	0.397	1	A
Dieldrin	ND		ug/kg	0.397	0.397	1	A
Endrin	ND		ug/kg	0.397	0.397	1	A
Endosulfan II	ND		ug/kg	0.397	0.397	1	A
4,4'-DDD	ND		ug/kg	0.397	0.397	1	A
cis-Nonachlor	ND		ug/kg	0.397	0.397	1	A
4,4'-DDT	ND		ug/kg	0.397	0.397	1	A
Methoxychlor	ND		ug/kg	3.97	3.97	1	A
Toxaphene	ND		ug/kg	19.9	19.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	53		30-150	A
BZ 198	68		30-150	A
DBOB	47		30-150	B
BZ 198	69		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-19
Client ID: NHH-D-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 23:21
Analyst: DP
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.692	0.692	1	A
gamma-BHC	ND		ug/kg	0.346	0.346	1	A
Heptachlor	ND		ug/kg	0.346	0.346	1	A
Aldrin	ND		ug/kg	0.346	0.346	1	A
Heptachlor epoxide	ND		ug/kg	0.692	0.692	1	B
Oxychlordane	ND		ug/kg	0.692	0.692	1	B
trans-Chlordane	ND		ug/kg	0.346	0.346	1	A
Endosulfan I	ND		ug/kg	0.346	0.346	1	A
cis-Chlordane	ND		ug/kg	0.346	0.346	1	A
trans-Nonachlor	ND		ug/kg	0.346	0.346	1	A
4,4'-DDE	ND		ug/kg	0.346	0.346	1	A
Dieldrin	ND		ug/kg	0.346	0.346	1	A
Endrin	ND		ug/kg	0.346	0.346	1	A
Endosulfan II	ND		ug/kg	0.346	0.346	1	A
4,4'-DDD	ND		ug/kg	0.346	0.346	1	A
cis-Nonachlor	ND		ug/kg	0.346	0.346	1	A
4,4'-DDT	ND		ug/kg	0.346	0.346	1	A
Methoxychlor	ND		ug/kg	3.46	3.46	1	A
Toxaphene	ND		ug/kg	17.4	17.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	54		30-150	A
BZ 198	75		30-150	A
DBOB	46		30-150	B
BZ 198	75		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-20
Client ID: NHH-F-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 08/31/17 23:55
Analyst: DP
Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.20	1.20	1	A
gamma-BHC	ND		ug/kg	0.598	0.598	1	A
Heptachlor	ND		ug/kg	0.598	0.598	1	A
Aldrin	ND		ug/kg	0.598	0.598	1	A
Heptachlor epoxide	ND		ug/kg	1.20	1.20	1	B
Oxychlordane	ND		ug/kg	1.20	1.20	1	B
trans-Chlordane	ND		ug/kg	0.598	0.598	1	A
Endosulfan I	ND		ug/kg	0.598	0.598	1	A
cis-Chlordane	ND		ug/kg	0.598	0.598	1	A
trans-Nonachlor	0.662		ug/kg	0.598	0.598	1	B
4,4'-DDE	2.14		ug/kg	0.598	0.598	1	B
Dieldrin	0.619	IP	ug/kg	0.598	0.598	1	A
Endrin	ND		ug/kg	0.598	0.598	1	A
Endosulfan II	ND		ug/kg	0.598	0.598	1	A
4,4'-DDD	0.800		ug/kg	0.598	0.598	1	A
cis-Nonachlor	ND		ug/kg	0.598	0.598	1	A
4,4'-DDT	0.776	IP	ug/kg	0.598	0.598	1	A
Methoxychlor	ND		ug/kg	5.98	5.98	1	A
Toxaphene	ND		ug/kg	30.0	30.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	74		30-150	A
DBOB	57		30-150	B
BZ 198	79		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-21
Client ID: NHH-F-REP-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 09/01/17 00:29
Analyst: DP
Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.13	1.13	1	A
gamma-BHC	ND		ug/kg	0.563	0.563	1	A
Heptachlor	ND		ug/kg	0.563	0.563	1	A
Aldrin	ND		ug/kg	0.563	0.563	1	A
Heptachlor epoxide	ND		ug/kg	1.13	1.13	1	B
Oxychlordane	ND		ug/kg	1.13	1.13	1	B
trans-Chlordane	ND		ug/kg	0.563	0.563	1	A
Endosulfan I	ND		ug/kg	0.563	0.563	1	A
cis-Chlordane	ND		ug/kg	0.563	0.563	1	A
trans-Nonachlor	ND		ug/kg	0.563	0.563	1	A
4,4'-DDE	2.27		ug/kg	0.563	0.563	1	A
Dieldrin	0.594	IP	ug/kg	0.563	0.563	1	A
Endrin	ND		ug/kg	0.563	0.563	1	A
Endosulfan II	ND		ug/kg	0.563	0.563	1	A
4,4'-DDD	0.902		ug/kg	0.563	0.563	1	A
cis-Nonachlor	ND		ug/kg	0.563	0.563	1	A
4,4'-DDT	0.698	IP	ug/kg	0.563	0.563	1	A
Methoxychlor	ND		ug/kg	5.63	5.63	1	A
Toxaphene	ND		ug/kg	28.3	28.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	76		30-150	A
DBOB	57		30-150	B
BZ 198	80		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-22
Client ID: NHH-F-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 09/01/17 01:03
Analyst: DP
Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.02	1.02	1	A
gamma-BHC	ND		ug/kg	0.510	0.510	1	A
Heptachlor	ND		ug/kg	0.510	0.510	1	A
Aldrin	ND		ug/kg	0.510	0.510	1	A
Heptachlor epoxide	ND		ug/kg	1.02	1.02	1	B
Oxychlordane	ND		ug/kg	1.02	1.02	1	B
trans-Chlordane	ND		ug/kg	0.510	0.510	1	A
Endosulfan I	ND		ug/kg	0.510	0.510	1	A
cis-Chlordane	ND		ug/kg	0.510	0.510	1	A
trans-Nonachlor	0.701		ug/kg	0.510	0.510	1	B
4,4'-DDE	4.10		ug/kg	0.510	0.510	1	A
Dieldrin	0.536	IP	ug/kg	0.510	0.510	1	A
Endrin	ND		ug/kg	0.510	0.510	1	A
Endosulfan II	ND		ug/kg	0.510	0.510	1	A
4,4'-DDD	1.56		ug/kg	0.510	0.510	1	A
cis-Nonachlor	ND		ug/kg	0.510	0.510	1	A
4,4'-DDT	1.46	P	ug/kg	0.510	0.510	1	B
Methoxychlor	ND		ug/kg	5.10	5.10	1	A
Toxaphene	ND		ug/kg	25.6	25.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	80		30-150	A
DBOB	61		30-150	B
BZ 198	88		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/30/17 16:28
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 08/18/17 15:15
Cleanup Method: EPA 3630
Cleanup Date: 08/26/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-04,06-10,16 Batch: WG1033330-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	64		30-150	A
BZ 198	69		30-150	A
DBOB	65		30-150	B
BZ 198	76		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/31/17 15:58
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 08/18/17 16:00
Cleanup Method: EPA 3630
Cleanup Date: 08/25/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 11-15,17-22 Batch: WG1033336-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	48		30-150	A
BZ 198	66		30-150	A
DBOB	46		30-150	B
BZ 198	63		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 09/05/17 16:15
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 08/31/17 09:30
Cleanup Method: EPA 3630
Cleanup Date: 09/01/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 05 Batch: WG1037294-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	47		30-150	A
BZ 198	83		30-150	A
DBOB	48		30-150	B
BZ 198	81		30-150	B



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-04,06-10,16 Batch: WG1033330-2 WG1033330-3									
Hexachlorobenzene	65		64		50-120	2		30	A
gamma-BHC	66		64		50-120	3		30	A
Heptachlor	67		66		50-120	2		30	A
Aldrin	67		65		50-120	3		30	A
trans-Chlordane	75		72		50-120	4		30	A
Endosulfan I	73		70		50-120	4		30	A
cis-Chlordane	72		68		50-120	6		30	A
trans-Nonachlor	72		69		50-120	4		30	A
4,4'-DDE	87		82		50-120	6		30	A
Dieldrin	82		79		50-120	4		30	A
Endrin	70		67		50-120	4		30	A
4,4'-DDD	85		80		50-120	6		30	A
cis-Nonachlor	72		69		50-120	4		30	A
4,4'-DDT	84		80		50-120	5		30	A
Methoxychlor	79		74		50-120	7		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	67		66		30-150	A
BZ 198	82		75		30-150	A
DBOB	70		68		30-150	B
BZ 198	84		72		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-04,06-10,16 Batch: WG1033330-2 WG1033330-3									
Heptachlor epoxide	76		73		50-120	4		30	B
Oxychlordane	75		71		50-120	5		30	B
Endosulfan II	75		72		50-120	4		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	67		66		30-150	A
BZ 198	82		75		30-150	A
DBOB	70		68		30-150	B
BZ 198	84		72		30-150	B

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 11-15,17-22 Batch: WG1033336-2 WG1033336-3									
Hexachlorobenzene	53		41	Q	50-120	26		30	A
gamma-BHC	57		46	Q	50-120	21		30	A
Heptachlor	55		44	Q	50-120	22		30	A
Aldrin	55		43	Q	50-120	24		30	A
trans-Chlordane	68		56		50-120	19		30	A
Endosulfan I	66		55		50-120	18		30	A
cis-Chlordane	64		52		50-120	21		30	A
trans-Nonachlor	64		52		50-120	21		30	A
4,4'-DDE	79		65		50-120	19		30	A
Dieldrin	75		64		50-120	16		30	A
Endrin	60		53		50-120	12		30	A
4,4'-DDD	82		70		50-120	16		30	A
cis-Nonachlor	67		57		50-120	16		30	A
4,4'-DDT	80		70		50-120	13		30	A
Methoxychlor	75		66		50-120	13		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	56		44		30-150	A
BZ 198	83		70		30-150	A
DBOB	55		43		30-150	B
BZ 198	79		68		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 11-15,17-22 Batch: WG1033336-2 WG1033336-3									
Heptachlor epoxide	66		54		50-120	20		30	B
Oxychlordane	63		51		50-120	21		30	B
Endosulfan II	69		61		50-120	12		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	56		44		30-150	A
BZ 198	83		70		30-150	A
DBOB	55		43		30-150	B
BZ 198	79		68		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 05 Batch: WG1037294-2 WG1037294-3									
Hexachlorobenzene	60		71		50-120	17		30	A
gamma-BHC	65		71		50-120	9		30	A
Heptachlor	62		72		50-120	15		30	A
Aldrin	61		69		50-120	12		30	A
trans-Chlordane	73		81		50-120	10		30	A
Endosulfan I	73		80		50-120	9		30	A
cis-Chlordane	70		78		50-120	11		30	A
trans-Nonachlor	69		78		50-120	12		30	A
4,4'-DDE	85		94		50-120	10		30	A
Dieldrin	84		93		50-120	10		30	A
Endrin	64		75		50-120	16		30	A
4,4'-DDD	84		89		50-120	6		30	A
cis-Nonachlor	73		81		50-120	10		30	A
4,4'-DDT	87		94		50-120	8		30	A
Methoxychlor	87		93		50-120	7		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	61		69		30-150	A
BZ 198	95		90		30-150	A
DBOB	62		71		30-150	B
BZ 198	85		90		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 05 Batch: WG1037294-2 WG1037294-3									
Heptachlor epoxide	76		83		50-120	9		30	B
Oxychlordane	72		79		50-120	9		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	61		69		30-150	A
BZ 198	95		90		30-150	A
DBOB	62		71		30-150	B
BZ 198	85		90		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Client ID: NHH-B Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033330-6 WG1033330-7 QC Sample: L1728049-16													
Hexachlorobenzene	ND	66.4	40.0	60		37.4	54		50-120	7		30	A
gamma-BHC	ND	66.4	40.3	61		38.7	55		50-120	4		30	A
Heptachlor	ND	66.4	39.6	60		38.0	54		50-120	4		30	A
Aldrin	ND	66.4	39.7	60		39.8	57		50-120	0		30	A
Heptachlor epoxide	ND	66.4	45.0	68		46.8	67		50-120	4		30	B
Oxychlordane	ND	66.4	43.9	66		43.8	63		50-120	0		30	B
trans-Chlordane	ND	66.4	44.9	68		46.1	66		50-120	3		30	A
Endosulfan I	ND	66.4	43.4	65		44.8	64		50-120	3		30	A
cis-Chlordane	ND	66.4	43.1	65		43.5	62		50-120	1		30	A
trans-Nonachlor	ND	66.4	43.3	65		43.6	62		50-120	1		30	A
4,4'-DDE	ND	66.4	51.7	78		53.2	76		50-120	3		30	A
Dieldrin	ND	66.4	48.8	74		50.1	72		50-120	3		30	A
Endrin	ND	66.4	42.7	64		43.4	62		50-120	2		30	A
Endosulfan II	ND	66.4	44.0	66		44.2	63		50-120	0		30	B
4,4'-DDD	ND	66.4	55.3	83		59.0	84		50-120	6		30	A
cis-Nonachlor	ND	66.4	42.9	65		45.2	65		50-120	5		30	A
4,4'-DDT	ND	66.4	39.7	60		45.4	65		50-120	13		30	A
Methoxychlor	ND	66.4	40.7	61		44.7	64		50-120	9		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
BZ 198	71		72		30-150	A
DBOB	63		57		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033330-6 WG1033330-7 QC Sample: L1728049-16
 Client ID: NHH-B

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	77		75		30-150	B
DBOB	60		55		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab ID: NHH-F-BOTTOM		Associated sample(s): 11-15,17-22				QC Batch ID: WG1033336-6		WG1033336-7		QC Sample: L1728049-22		Client	
Hexachlorobenzene	ND	105	50.3	48	Q	58.2	53		50-120	15		30	A
gamma-BHC	ND	105	58.1	56		66.6	61		50-120	14		30	A
Heptachlor	ND	105	56.8	54		65.7	60		50-120	15		30	A
Aldrin	ND	105	59.0	56		67.0	61		50-120	13		30	A
Heptachlor epoxide	ND	105	59.6	57		67.1	61		50-120	12		30	B
Oxychlordane	ND	105	56.7	54		63.7	58		50-120	12		30	B
trans-Chlordane	ND	105	69.5	66		75.6	69		50-120	8		30	A
Endosulfan I	ND	105	67.4	64		72.9	66		50-120	8		30	A
cis-Chlordane	ND	105	64.7	62		70.4	64		50-120	8		30	A
trans-Nonachlor	ND	105	64.6	61		70.0	63		50-120	8		30	A
4,4'-DDE	4.10	105	85.0	77		90.2	78		50-120	6		30	A
Dieldrin	0.536	105	73.5	70		78.8	71		50-120	7		30	A
Endrin	ND	105	68.4	65		72.4	66		50-120	6		30	A
Endosulfan II	ND	105	61.4	59		65.1	59		50-120	6		30	B
4,4'-DDD	1.56	105	82.6	77		88.0	79		50-120	6		30	A
cis-Nonachlor	ND	105	66.0	63		70.6	64		50-120	7		30	A
4,4'-DDT	ND	105	74.6	71		78.5	71		50-120	5		30	A
Methoxychlor	ND	105	73.3	70		74.0	67		50-120	1		30	A

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	77		77		30-150	A
DBOB	58		64		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033336-6 WG1033336-7 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM												

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	83		82		30-150	B
DBOB	49		53		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab L Associated sample(s): 05 QC Batch ID: WG1037294-6 WG1037294-7 QC Sample: L1728049-05 Client ID: NHH-L													
Hexachlorobenzene	ND	105	90.0	86		77.9	71		50-120	14		30	A
gamma-BHC	ND	105	86.0	82		80.4	73		50-120	7		30	A
Heptachlor	ND	105	82.7	79		80.3	73		50-120	3		30	A
Aldrin	ND	105	87.0	83		85.2	78		50-120	2		30	A
Heptachlor epoxide	ND	105	85.7	82		85.4	78		50-120	0		30	B
Oxychlordane	ND	105	85.2	81		84.7	77		50-120	1		30	B
trans-Chlordane	ND	105	96.3	92		96.1	88		50-120	0		30	A
Endosulfan I	ND	105	93.4	89		92.9	85		50-120	1		30	A
cis-Chlordane	ND	105	91.0	87		90.1	82		50-120	1		30	A
trans-Nonachlor	ND	105	90.2	86		89.5	82		50-120	1		30	A
4,4'-DDE	ND	105	114	108		114	104		50-120	0		30	A
Dieldrin	ND	105	103	98		104	95		50-120	1		30	A
Endrin	ND	105	93.6	89		94.8	87		50-120	1		30	A
4,4'-DDD	ND	105	106	101		109	99		50-120	3		30	A
cis-Nonachlor	ND	105	90.2	86		91.5	83		50-120	1		30	A
4,4'-DDT	ND	105	103	98		108	99		50-120	5		30	A
Methoxychlor	ND	105	104	99		107	98		50-120	3		30	A

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	101		96		30-150	A
DBOB	84		71		30-150	A
BZ 198	102		98		30-150	B

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037294-6 WG1037294-7 QC Sample: L1728049-05 Client ID: NHH-L												

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		66		30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033330-5 QC Sample: L1728049-16 Client ID: NHH-B						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 A
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-04,06-10,16 QC Batch ID: WG1033330-5 QC Sample: L1728049-16 Client ID: NHH-B						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		64		30-150	A
BZ 198	70		74		30-150	A
DBOB	64		62		30-150	B
BZ 198	74		75		30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033336-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
4,4'-DDE	4.10	4.07	ug/kg	1		30 A
Dieldrin	0.536	ND	ug/kg	NC		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	1.56	1.66	ug/kg	6		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	1.46	1.45P	ug/kg	1		30 B
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
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Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 11-15,17-22 QC Batch ID: WG1033336-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		69		30-150	A
BZ 198	80		78		30-150	A
DBOB	61		60		30-150	B
BZ 198	88		88		30-150	B

Lab Duplicate Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037294-5 QC Sample: L1728049-05 Client ID: NHH-L						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 A
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
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Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 05 QC Batch ID: WG1037294-5 QC Sample: L1728049-05 Client ID: NHH-L						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	62		70		30-150	A
BZ 198	84		99		30-150	A
DBOB	54		64		30-150	B
BZ 198	87		105		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1033330-4

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	84		40-140
cis-Chlordane	119		40-140
trans-Nonachlor	476	Q	40-140
DBOB (Surrogate)	70		30-150
DBOB (Surrogate)	93		30-150
BZ 198 (Surrogate)	93		30-150
BZ 198 (Surrogate)	205	Q	30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1033336-4

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	82		40-140
cis-Chlordane	101		40-140
trans-Nonachlor	290	Q	40-140
DBOB (Surrogate)	52		30-150
DBOB (Surrogate)	60		30-150
BZ 198 (Surrogate)	94		30-150
BZ 198 (Surrogate)	179	Q	30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1037294-4

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	86		40-140
cis-Chlordane	113		40-140
trans-Nonachlor	320	Q	40-140
DBOB (Surrogate)	69		30-150
DBOB (Surrogate)	78		30-150
BZ 198 (Surrogate)	125		30-150
BZ 198 (Surrogate)	179	Q	30-150

METALS

Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-01

Date Collected: 08/10/17 08:32

Client ID: NHH-R-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 37%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.6		mg/kg	0.231	0.031	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Cadmium, Total	0.831		mg/kg	0.092	0.012	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Chromium, Total	67.9		mg/kg	0.924	0.216	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Copper, Total	98.8		mg/kg	0.924	0.090	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Lead, Total	58.5		mg/kg	0.277	0.068	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Mercury, Total	0.250		mg/kg	0.039	0.005	5	08/22/17 10:02	08/24/17 15:29	EPA 7474	1,7474	BV
Nickel, Total	26.2		mg/kg	0.462	0.124	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV
Zinc, Total	193		mg/kg	4.62	1.20	2	08/22/17 10:09	08/31/17 14:08	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-02

Date Collected: 08/10/17 08:32

Client ID: NHH-R-BOTTOM

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.3		mg/kg	0.200	0.026	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Cadmium, Total	1.14		mg/kg	0.080	0.011	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Chromium, Total	82.8		mg/kg	0.798	0.187	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Copper, Total	135		mg/kg	0.798	0.077	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Lead, Total	76.8		mg/kg	0.240	0.058	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Mercury, Total	0.325		mg/kg	0.027	0.003	5	08/22/17 10:02	08/24/17 15:32	EPA 7474	1,7474	BV
Nickel, Total	28.8		mg/kg	0.399	0.107	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV
Zinc, Total	221		mg/kg	3.99	1.04	2	08/22/17 10:09	08/31/17 14:12	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-03

Date Collected: 08/10/17 09:55

Client ID: NHH-S-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.5		mg/kg	0.217	0.029	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Cadmium, Total	3.06		mg/kg	0.087	0.011	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Chromium, Total	143		mg/kg	0.868	0.203	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Copper, Total	206		mg/kg	0.868	0.084	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Lead, Total	113		mg/kg	0.260	0.063	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Mercury, Total	0.543		mg/kg	0.031	0.004	5	08/22/17 10:02	08/24/17 15:34	EPA 7474	1,7474	BV
Nickel, Total	31.6		mg/kg	0.434	0.116	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV
Zinc, Total	338		mg/kg	4.34	1.13	2	08/22/17 10:09	08/31/17 14:16	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-04

Date Collected: 08/10/17 11:41

Client ID: NHH-J

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.8		mg/kg	0.185	0.025	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Cadmium, Total	1.60		mg/kg	0.074	0.010	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Chromium, Total	84.8		mg/kg	0.742	0.174	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Copper, Total	150		mg/kg	0.742	0.072	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Lead, Total	71.8		mg/kg	0.222	0.054	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Mercury, Total	0.925		mg/kg	0.025	0.003	5	08/22/17 10:02	08/24/17 15:36	EPA 7474	1,7474	BV
Nickel, Total	25.8		mg/kg	0.371	0.099	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV
Zinc, Total	223		mg/kg	3.71	0.964	2	08/22/17 10:09	08/31/17 14:20	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-05

Date Collected: 08/10/17 13:00

Client ID: NHH-L

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 46%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	13.8		mg/kg	0.165	0.022	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Cadmium, Total	0.991		mg/kg	0.066	0.009	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Chromium, Total	52.6		mg/kg	0.660	0.154	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Copper, Total	170		mg/kg	0.660	0.064	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Lead, Total	157		mg/kg	0.198	0.048	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Mercury, Total	1.12		mg/kg	0.030	0.004	5	08/22/17 10:02	08/24/17 15:44	EPA 7474	1,7474	BV
Nickel, Total	22.1		mg/kg	0.330	0.088	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV
Zinc, Total	212		mg/kg	3.30	0.859	2	08/22/17 10:09	08/31/17 14:25	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-06

Date Collected: 08/10/17 14:09

Client ID: NHH-K-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	8.12		mg/kg	0.148	0.020	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Cadmium, Total	0.402		mg/kg	0.059	0.008	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Chromium, Total	47.5		mg/kg	0.593	0.139	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Copper, Total	57.4		mg/kg	0.593	0.058	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Lead, Total	37.6		mg/kg	0.178	0.043	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Mercury, Total	0.144		mg/kg	0.025	0.003	5	08/22/17 10:02	08/24/17 15:47	EPA 7474	1,7474	BV
Nickel, Total	19.4		mg/kg	0.297	0.079	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV
Zinc, Total	132		mg/kg	2.97	0.771	2	08/22/17 10:09	08/31/17 14:29	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-07

Date Collected: 08/10/17 14:58

Client ID: NHH-H-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 49%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.4		mg/kg	0.142	0.019	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Cadmium, Total	0.860		mg/kg	0.057	0.008	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Chromium, Total	69.4		mg/kg	0.568	0.133	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Copper, Total	80.0		mg/kg	0.568	0.055	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Lead, Total	47.0		mg/kg	0.170	0.042	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Mercury, Total	0.189		mg/kg	0.024	0.003	5	08/22/17 10:02	08/24/17 15:49	EPA 7474	1,7474	BV
Nickel, Total	22.7		mg/kg	0.284	0.076	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV
Zinc, Total	155		mg/kg	2.84	0.738	2	08/22/17 10:09	08/31/17 14:33	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-08

Date Collected: 08/10/17 14:58

Client ID: NHH-H-REP-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.7		mg/kg	0.138	0.018	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Cadmium, Total	0.974		mg/kg	0.055	0.007	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Chromium, Total	80.9		mg/kg	0.554	0.130	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Copper, Total	96.2		mg/kg	0.554	0.054	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Lead, Total	56.6		mg/kg	0.166	0.040	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Mercury, Total	0.331		mg/kg	0.025	0.003	5	08/22/17 10:02	08/24/17 15:52	EPA 7474	1,7474	BV
Nickel, Total	24.9		mg/kg	0.277	0.074	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV
Zinc, Total	183		mg/kg	2.77	0.720	2	08/22/17 10:09	08/31/17 14:37	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-09

Date Collected: 08/10/17 14:58

Client ID: NHH-H-BOTTOM

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.58		mg/kg	0.103	0.014	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Cadmium, Total	0.134		mg/kg	0.041	0.005	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Chromium, Total	12.4		mg/kg	0.411	0.096	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Copper, Total	6.63		mg/kg	0.411	0.040	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Lead, Total	6.12		mg/kg	0.123	0.030	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Mercury, Total	0.003	J	mg/kg	0.016	0.002	5	08/22/17 10:02	08/24/17 15:54	EPA 7474	1,7474	BV
Nickel, Total	7.54		mg/kg	0.206	0.055	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV
Zinc, Total	24.5		mg/kg	2.06	0.535	2	08/22/17 10:09	08/31/17 14:52	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-10

Date Collected: 08/10/17 15:48

Client ID: NHH-I-TOP

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	8.18		mg/kg	0.143	0.019	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Cadmium, Total	0.143		mg/kg	0.057	0.008	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Chromium, Total	22.8		mg/kg	0.574	0.134	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Copper, Total	11.0		mg/kg	0.574	0.056	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Lead, Total	9.33		mg/kg	0.172	0.042	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Mercury, Total	0.018	J	mg/kg	0.021	0.003	5	08/22/17 10:02	08/24/17 15:57	EPA 7474	1,7474	BV
Nickel, Total	14.7		mg/kg	0.287	0.077	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV
Zinc, Total	50.7		mg/kg	2.87	0.746	2	08/22/17 10:09	08/31/17 14:57	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-11

Date Collected: 08/10/17 15:48

Client ID: NHH-I-BOTTOM

Date Received: 08/10/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.3		mg/kg	0.149	0.020	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Cadmium, Total	0.155		mg/kg	0.060	0.008	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Chromium, Total	30.6		mg/kg	0.595	0.139	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Copper, Total	12.2		mg/kg	0.595	0.058	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Lead, Total	10.9		mg/kg	0.178	0.043	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.023	0.003	5	08/22/17 10:02	08/24/17 15:59	EPA 7474	1,7474	BV
Nickel, Total	19.9		mg/kg	0.298	0.080	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV
Zinc, Total	64.3		mg/kg	2.98	0.774	2	08/22/17 10:09	08/31/17 15:01	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-12

Date Collected: 08/11/17 08:37

Client ID: NHH-G-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	12.1		mg/kg	0.176	0.023	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Cadmium, Total	0.736		mg/kg	0.070	0.009	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Chromium, Total	67.4		mg/kg	0.704	0.165	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Copper, Total	118		mg/kg	0.704	0.068	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Lead, Total	51.3		mg/kg	0.211	0.051	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Mercury, Total	0.457		mg/kg	0.036	0.005	5	08/22/17 10:02	08/24/17 16:02	EPA 7474	1,7474	BV
Nickel, Total	23.2		mg/kg	0.352	0.094	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV
Zinc, Total	183		mg/kg	3.52	0.916	2	08/22/17 10:09	08/31/17 15:05	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-13

Date Collected: 08/11/17 08:37

Client ID: NHH-G-BOTTOM

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.8		mg/kg	0.145	0.019	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Cadmium, Total	0.188		mg/kg	0.058	0.008	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Chromium, Total	30.2		mg/kg	0.580	0.136	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Copper, Total	12.5		mg/kg	0.580	0.056	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Lead, Total	10.6		mg/kg	0.174	0.042	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.028	0.004	5	08/22/17 10:02	08/24/17 16:04	EPA 7474	1,7474	BV
Nickel, Total	19.7		mg/kg	0.290	0.077	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV
Zinc, Total	64.2		mg/kg	2.90	0.753	2	08/22/17 10:09	08/31/17 15:09	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-14

Date Collected: 08/11/17 10:33

Client ID: NHH-C-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.10		mg/kg	0.111	0.015	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Cadmium, Total	0.064		mg/kg	0.044	0.006	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Chromium, Total	13.0		mg/kg	0.444	0.104	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Copper, Total	8.41		mg/kg	0.444	0.043	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Lead, Total	5.77		mg/kg	0.133	0.032	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Mercury, Total	0.015	J	mg/kg	0.017	0.002	5	08/22/17 10:02	08/24/17 16:07	EPA 7474	1,7474	BV
Nickel, Total	7.40		mg/kg	0.222	0.059	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV
Zinc, Total	31.5		mg/kg	2.22	0.577	2	08/22/17 10:09	08/31/17 15:13	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-15

Date Collected: 08/11/17 10:33

Client ID: NHH-C-BOTTOM

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 62%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	6.14		mg/kg	0.121	0.016	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Cadmium, Total	0.071		mg/kg	0.049	0.006	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Chromium, Total	16.1		mg/kg	0.486	0.114	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Copper, Total	6.45		mg/kg	0.486	0.047	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Lead, Total	5.20		mg/kg	0.146	0.036	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.021	0.003	5	08/22/17 10:02	08/24/17 16:15	EPA 7474	1,7474	BV
Nickel, Total	10.4		mg/kg	0.243	0.065	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV
Zinc, Total	32.8		mg/kg	2.43	0.632	2	08/22/17 10:09	08/31/17 15:17	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-16

Date Collected: 08/11/17 11:57

Client ID: NHH-B

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.12		mg/kg	0.106	0.014	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Cadmium, Total	0.069		mg/kg	0.043	0.006	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Chromium, Total	10.3		mg/kg	0.426	0.100	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Copper, Total	5.41		mg/kg	0.426	0.041	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Lead, Total	3.76		mg/kg	0.128	0.031	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.020	0.002	5	08/22/17 10:02	08/24/17 15:19	EPA 7474	1,7474	BV
Nickel, Total	6.36		mg/kg	0.213	0.057	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV
Zinc, Total	21.0		mg/kg	2.13	0.554	2	08/22/17 10:09	08/31/17 13:35	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-17

Date Collected: 08/11/17 13:40

Client ID: NHH-A-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 61%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.41		mg/kg	0.126	0.017	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Cadmium, Total	0.077		mg/kg	0.051	0.007	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Chromium, Total	10.6		mg/kg	0.505	0.118	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Copper, Total	10.0		mg/kg	0.505	0.049	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Lead, Total	6.76		mg/kg	0.152	0.037	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Mercury, Total	0.028		mg/kg	0.017	0.002	5	08/22/17 10:02	08/24/17 16:17	EPA 7474	1,7474	BV
Nickel, Total	5.30		mg/kg	0.253	0.068	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV
Zinc, Total	29.3		mg/kg	2.53	0.657	2	08/22/17 10:09	08/31/17 15:21	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-18

Date Collected: 08/11/17 15:07

Client ID: NHH-D-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 60%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.61		mg/kg	0.136	0.018	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Cadmium, Total	0.064		mg/kg	0.055	0.007	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Chromium, Total	10.8		mg/kg	0.545	0.127	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Copper, Total	8.98		mg/kg	0.545	0.053	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Lead, Total	5.80		mg/kg	0.163	0.040	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Mercury, Total	0.031		mg/kg	0.018	0.002	5	08/22/17 10:02	08/24/17 16:20	EPA 7474	1,7474	BV
Nickel, Total	5.37		mg/kg	0.272	0.073	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV
Zinc, Total	26.3		mg/kg	2.72	0.708	2	08/22/17 10:09	08/31/17 15:25	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-19

Date Collected: 08/11/17 15:07

Client ID: NHH-D-BOTTOM

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	7.01		mg/kg	0.106	0.014	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Cadmium, Total	0.102		mg/kg	0.042	0.006	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Chromium, Total	20.9		mg/kg	0.423	0.099	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Copper, Total	7.74		mg/kg	0.423	0.041	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Lead, Total	6.83		mg/kg	0.127	0.031	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Mercury, Total	ND		mg/kg	0.018	0.002	5	08/22/17 10:02	08/24/17 16:22	EPA 7474	1,7474	BV
Nickel, Total	13.5		mg/kg	0.212	0.057	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV
Zinc, Total	42.9		mg/kg	2.12	0.550	2	08/22/17 10:09	08/31/17 15:30	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-20

Date Collected: 08/11/17 16:50

Client ID: NHH-F-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 40%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.49		mg/kg	0.222	0.029	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Cadmium, Total	0.556		mg/kg	0.089	0.012	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Chromium, Total	69.8		mg/kg	0.888	0.208	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Copper, Total	81.4		mg/kg	0.888	0.086	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Lead, Total	51.2		mg/kg	0.266	0.065	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Mercury, Total	0.270		mg/kg	0.027	0.003	5	08/22/17 10:02	08/24/17 16:25	EPA 7474	1,7474	BV
Nickel, Total	24.6		mg/kg	0.444	0.119	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV
Zinc, Total	184		mg/kg	4.44	1.15	2	08/22/17 10:09	08/31/17 15:42	EPA 3050B	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-21

Date Collected: 08/11/17 16:50

Client ID: NHH-F-REP-TOP

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	8.51		mg/kg	0.225	0.030	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Cadmium, Total	0.644		mg/kg	0.090	0.012	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Chromium, Total	72.2		mg/kg	0.899	0.210	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Copper, Total	96.7		mg/kg	0.899	0.087	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Lead, Total	48.8		mg/kg	0.270	0.066	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Mercury, Total	0.241		mg/kg	0.028	0.004	5	08/22/17 10:02	08/24/17 11:05	EPA 7474	1,7474	BV
Nickel, Total	27.4		mg/kg	0.449	0.120	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM
Zinc, Total	186		mg/kg	4.49	1.17	2	08/15/17 22:15	08/22/17 17:27	EPA 3050B	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-22

Date Collected: 08/11/17 16:50

Client ID: NHH-F-BOTTOM

Date Received: 08/11/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.1		mg/kg	0.221	0.029	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Cadmium, Total	1.12		mg/kg	0.088	0.012	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Chromium, Total	94.2		mg/kg	0.883	0.206	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Copper, Total	184		mg/kg	0.883	0.086	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Lead, Total	63.4		mg/kg	0.265	0.064	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Mercury, Total	0.490		mg/kg	0.029	0.004	5	08/22/17 10:02	08/24/17 10:53	EPA 7474	1,7474	BV
Nickel, Total	24.5		mg/kg	0.441	0.118	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM
Zinc, Total	246		mg/kg	4.41	1.15	2	08/15/17 22:15	08/22/17 16:42	EPA 3050B	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 21-22 Batch: WG1032246-1										
Arsenic, Total	ND		mg/kg	0.100	0.013	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.005	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.094	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Copper, Total	ND		mg/kg	0.400	0.039	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Lead, Total	ND		mg/kg	0.120	0.029	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Nickel, Total	ND		mg/kg	0.200	0.053	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Zinc, Total	ND		mg/kg	2.00	0.520	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-20 Batch: WG1034123-1										
Arsenic, Total	ND		mg/kg	0.100	0.013	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Cadmium, Total	ND		mg/kg	0.040	0.005	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Chromium, Total	ND		mg/kg	0.400	0.094	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Copper, Total	ND		mg/kg	0.400	0.039	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Lead, Total	ND		mg/kg	0.120	0.029	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Nickel, Total	ND		mg/kg	0.200	0.053	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV
Zinc, Total	ND		mg/kg	2.00	0.520	2	08/22/17 10:09	08/31/17 13:10	1,6020A	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-20 Batch: WG1034139-1										
Mercury, Total	ND		mg/kg	0.013	0.002	5	08/22/17 10:02	08/24/17 15:14	1,7474	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 7474

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 21-22 Batch: WG1034140-1									
Mercury, Total	ND	mg/kg	0.013	0.002	5	08/22/17 10:02	08/24/17 10:48	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-22 Batch: WG1032246-2 SRM Lot Number: D093-540								
Arsenic, Total	92		-		70-130	-		20
Cadmium, Total	92		-		83-117	-		20
Chromium, Total	92		-		80-120	-		20
Copper, Total	88		-		82-118	-		20
Lead, Total	87		-		82-117	-		20
Nickel, Total	91		-		83-117	-		20
Zinc, Total	88		-		83-117	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 Batch: WG1034123-2 SRM Lot Number: D093-540								
Arsenic, Total	100		-		70-130	-		20
Cadmium, Total	90		-		83-117	-		20
Chromium, Total	96		-		80-120	-		20
Copper, Total	94		-		82-118	-		20
Lead, Total	93		-		82-117	-		20
Nickel, Total	95		-		83-117	-		20
Zinc, Total	93		-		83-117	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 Batch: WG1034139-2 SRM Lot Number: D093-540								
Mercury, Total	90		-		72-128	-		20

Lab Control Sample Analysis
Batch Quality Control**Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1728049**Report Date:** 09/08/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-22 Batch: WG1034140-2 SRM Lot Number: D093-540					
Mercury, Total	97	-	72-128	-	20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1032246-3 WG1032246-4 QC Sample: L1726857-01 Client ID: MS Sample												
Arsenic, Total	4.04	10.2	13.6	93		13.7	95		75-125	1		20
Cadmium, Total	0.039J	4.36	4.72	108		4.55	106		75-125	4		20
Chromium, Total	27.3	17.1	43.7	96		47.4	119		75-125	8		20
Copper, Total	7.39	21.3	28.8	100		29.5	105		75-125	2		20
Lead, Total	4.19	43.6	46.4	97		47.1	100		75-125	1		20
Nickel, Total	16.3	42.7	58.2	98		60.0	103		75-125	3		20
Zinc, Total	22.7	42.7	64.7	98		68.3	108		75-125	5		20
Total Metals - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1032246-7 WG1032246-8 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM												
Arsenic, Total	11.1	20.8	31.3	97		29.9	88		75-125	5		20
Cadmium, Total	1.12	8.86	10.4	105		10.2	100		75-125	2		20
Chromium, Total	94.2	34.8	164	201	Q	132	106		75-125	22	Q	20
Copper, Total	184.	43.4	288	239	Q	220	81		75-125	27	Q	20
Lead, Total	63.4	88.6	154	102		140	84		75-125	10		20
Nickel, Total	24.5	86.9	111	100		108	94		75-125	3		20
Zinc, Total	246.	86.9	358	129	Q	316	78		75-125	12		20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1034123-3 WG1034123-4 QC Sample: L1728049-16 Client ID: NHH-B									
Arsenic, Total	3.12	9.77	12.8	99	12.2	104	75-125	5	20
Cadmium, Total	0.069	4.15	4.40	104	4.13	109	75-125	6	20
Chromium, Total	10.3	16.3	27.9	108	26.3	110	75-125	6	20
Copper, Total	5.41	20.4	26.1	102	24.2	103	75-125	8	20
Lead, Total	3.76	41.5	44.8	99	41.3	101	75-125	8	20
Nickel, Total	6.36	40.7	47.3	100	44.9	106	75-125	5	20
Zinc, Total	21.0	40.7	64.5	107	60.2	108	75-125	7	20
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1034139-3 WG1034139-4 QC Sample: L1728049-16 Client ID: NHH-B									
Mercury, Total	ND	0.846	0.721	85	0.784	86	80-120	8	20
Total Metals - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1034140-3 WG1034140-4 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM									
Mercury, Total	0.490	1.57	2.32	116	2.33	114	80-120	0	20

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1032246-9 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Arsenic, Total	11.1	11.9	mg/kg	7		20
Cadmium, Total	1.12	1.08	mg/kg	4		20
Chromium, Total	94.2	99.1	mg/kg	5		20
Copper, Total	184.	191	mg/kg	4		20
Lead, Total	63.4	69.9	mg/kg	10		20
Nickel, Total	24.5	26.3	mg/kg	7		20
Zinc, Total	246.	259	mg/kg	5		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1034123-5 QC Sample: L1728049-16 Client ID: NHH-B						
Arsenic, Total	3.12	3.71	mg/kg	17		20
Cadmium, Total	0.069	0.070	mg/kg	1		20
Chromium, Total	10.3	10.1	mg/kg	2		20
Copper, Total	5.41	5.28	mg/kg	2		20
Lead, Total	3.76	3.85	mg/kg	2		20
Nickel, Total	6.36	6.15	mg/kg	3		20
Zinc, Total	21.0	22.0	mg/kg	5		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1034139-5 QC Sample: L1728049-16 Client ID: NHH-B						
Mercury, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1034140-5 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Mercury, Total	0.490	0.653	mg/kg	29	Q	20

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-01
Client ID: NHH-R-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.92		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.69		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	37.3		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	62.7		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-02
Client ID: NHH-R-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 08:32
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.84		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.94		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	44.1		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	55.9		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-03
Client ID: NHH-S-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 09:55
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.66		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.61		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	40.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	60.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-04
Client ID: NHH-J
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 11:41
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.46		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.31		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	41.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	58.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-05
Client ID: NHH-L
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 13:00
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.27		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.17		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	45.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	54.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-06

Client ID: NHH-K-TOP

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/10/17 14:09

Date Received: 08/10/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.93		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.72		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	47.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	52.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-07
Client ID: NHH-H-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.90		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.94		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	48.9		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	51.1		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-08
Client ID: NHH-H-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.27		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.02		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	46.8		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	53.2		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-09
Client ID: NHH-H-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 14:58
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.843		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.828		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	71.1		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	28.9		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-10
Client ID: NHH-I-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.56		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.42		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	48.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	51.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-11
Client ID: NHH-I-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/10/17 15:48
Date Received: 08/10/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.33		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.33		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	48.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	52.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-12
Client ID: NHH-G-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.80		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.57		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	41.5		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	58.5		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-13
Client ID: NHH-G-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 08:37
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.37		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.42		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	47.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	52.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-14
Client ID: NHH-C-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.467		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.382		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	70.4		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	29.6		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-15
Client ID: NHH-C-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 10:33
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.556		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.578		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	62.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	38.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-16
Client ID: NHH-B
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 11:57
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.49		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.924		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	69.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	31.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-17
Client ID: NHH-A-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 13:40
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.211		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.215		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	60.7		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	39.3		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-18
Client ID: NHH-D-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 15:07
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.16		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.998		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	60.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	40.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-19

Client ID: NHH-D-BOTTOM

Sample Location: NEW HAVEN, CT

Matrix: Sediment

Date Collected: 08/11/17 15:07

Date Received: 08/11/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.18		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.12		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	66.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	34.0		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-20
Client ID: NHH-F-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.85		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.89		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	40.2		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV
Moisture	59.8		%	0.100	0.100	1	-	08/23/17 08:57	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-21
Client ID: NHH-F-REP-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.87		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.92		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	43.1		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV
Moisture	56.9		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728049-22
Client ID: NHH-F-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/11/17 16:50
Date Received: 08/11/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.00		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	1.98		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	44.6		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV
Moisture	55.4		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV



Project Name: USACE/NHH FNP

Lab Number: L1728049

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab for sample(s): 03-22 Batch: WG1036606-1										
Total Organic Carbon (Rep1)	0.013		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	0.018		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon - Mansfield Lab for sample(s): 01-02 Batch: WG1037985-1										
Total Organic Carbon (Rep1)	ND		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	ND		%	0.010	0.010	1	-	09/01/17 00:00	1,9060A	SP



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 03-22 Batch: WG1036606-2								
Total Organic Carbon (Rep1)	98		-		75-125	-		25
Total Organic Carbon (Rep2)	93		-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 Batch: WG1037985-2								
Total Organic Carbon (Rep1)	88		-		75-125	-		25
Total Organic Carbon (Rep2)	84		-		75-125	-		25

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 03-22 QC Batch ID: WG1036606-4 WG1036606-5 QC Sample: L1728049-16 Client ID: NHH-B												
Total Organic Carbon (Rep1)	1.49	1.38	1.93	32	Q	2.67	65	Q	75-125	32	Q	25
Total Organic Carbon (Rep2)	0.924	1.5	2.41	99		1.74	71	Q	75-125	32	Q	25
Total Organic Carbon - Mansfield Lab Associated sample(s): 03-22 QC Batch ID: WG1036606-7 WG1036606-8 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM												
Total Organic Carbon (Rep1)	2.00	1.31	3.51	115		3.66	105		75-125	4		25
Total Organic Carbon (Rep2)	1.98	1.66	3.84	112		4.12	114		75-125	7		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1037985-4 QC Sample: L1728049-01 Client ID: NHH-R-TOP												
Total Organic Carbon (Rep1)	2.92	1.59	4.35	90		-	-		75-125	-		25
Total Organic Carbon (Rep2)	2.69	1.98	4.75	104		-	-		75-125	-		25

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728049

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 21-22 QC Batch ID: WG1034557-1 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Solids, Total	44.6	40.5	%	10		10
Moisture	55.4	59.5	%	7		10
General Chemistry - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1034558-1 QC Sample: L1728049-16 Client ID: NHH-B						
Solids, Total	69.0	70.0	%	1		10
Moisture	31	30.0	%	3		10
Total Organic Carbon - Mansfield Lab Associated sample(s): 03-22 QC Batch ID: WG1036606-3 QC Sample: L1728049-16 Client ID: NHH-B						
Total Organic Carbon (Rep1)	1.49	1.14	%	27	Q	25
Total Organic Carbon (Rep2)	0.924	0.854	%	8		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 03-22 QC Batch ID: WG1036606-6 QC Sample: L1728049-22 Client ID: NHH-F-BOTTOM						
Total Organic Carbon (Rep1)	2.00	2.19	%	9		25
Total Organic Carbon (Rep2)	1.98	2.00	%	1		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1037985-3 QC Sample: L1728049-01 Client ID: NHH-R-TOP						
Total Organic Carbon (Rep1)	2.92	2.80	%	4		25
Total Organic Carbon (Rep2)	2.69	2.73	%	1		25

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 09081718:38
Lab Number: L1728049
Report Date: 09/08/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-01A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-02A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-03A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-04A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:09081718:38
Lab Number: L1728049
Report Date: 09/08/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-05A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-06A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-07A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-08A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-09A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

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Lab Number: L1728049
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-10A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-11A	Glass 500ml/16oz unpreserved	A	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-12A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-13A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-14A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:09081718:38
Lab Number: L1728049
Report Date: 09/08/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-15A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-16A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-16A1	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-16A2	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-17A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-18A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-19A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-20A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-21A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-22A	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP**Lab Number:** L1728049**Project Number:** 60543021**Report Date:** 09/08/17**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728049-22A1	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728049-22A2	Glass 500ml/16oz unpreserved	B	NA		2.0	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728049
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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

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projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No – see Narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	16MS/MSD: Naphthalene 47%/47%, Acenaphthalene 48%/48%, Acenaphthene (46%/46%, Fluorene 48%/49%, Phenanthrene 46%/48% 05MS: Benz(a)anthracene 121% 22MSD: Fluoranthene 41%, Pyrene 49%	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	05D: Acenaphthylene 35% 22D: Acenaphthylene 32%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab



* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes= average No = individual	Opening CCV for Blank/LCS/LCSD: Column B: hexachlorobenzene @ 30%, Opening CCV for 8049-11-14, 15, 17-22: Column B: hexachlorobenzene @ 18%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM1: trans-Nonachlor @476% SRM2: trans-Nonachlor @290% SRM3: trans-Nonachlor @ 320%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	22MS: Hexachlorobenzene @ 48%	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	SRM1: BZ198 205% column B SRM2: BZ198 179% column B SRM3: BZ198 179% column B	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM: C13-BZ#28: 39% SRM2: C110-BZ#209: 232%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	22D: C15-BZ#101: 35%, C17-BZ#187: 32%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	No	Annual	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	No	22MS: Chromium (201%); Zinc (129%); Copper (239%) RPDs: Chromium (22%) and Copper (27%)	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	No	-16: TOC (Rep1) (27%)	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

11728049

Page 1 of 2

Client/Project Name:
USACE-MHH-FMPProject Location:
New Haven, CTProject Number:
60543021

Field Logbook No.:

Sampler (Print Name)/(Affiliation):
C. Steve Howe / AECOM

Chain of Custody Tape Nos.:

Signature:

Send Results/Report to:

TAT:

Analysis Requested

Container Type
P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - EncorePreservation
1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - WaterS - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification

Date

Time

COMP

GRAB

Sample Container
(Size/Mat'l)

Matrix

Preserv.

Field Filtered

Grain Size

Metals - 6020A / 7474B
PCBs - 8082 / 8210-SIM
Pesticides - 8081B
PAHs - 8200-SIM
TOC - 9060

Lab I.D.

Remarks

NHH-R-Top	8/14/17	0832	X		802/1602	SD	4°C	NA	X	X	X	X	X	X							0-4'2"
NHH-R-Bottom		0832	X		"	SD	4°C		X	X	X	X	X	X							4'2"-7'8"
NHH-S-Top		0955	X		"	SD	4°C		X	X	X	X	X	X							0-6'0"
NHH-S-Bottom		0955	X		802	SD	4°C		X												6'0"-6'5"
NHH-J		1141	X		802/1602	SD	4°C		X	X	X	X	X	X							0-5'5"
NHH-L		1300	X		"	SD	4°C		X	X	X	X	X	X							0-6'9"
NHH-K-Top		1409	X		802/1602	SD	4°C		X	X	X	X	X	X							0-5'6"
NHH-K-Bottom		1409	X		802	SD	4°C		X												5'6"-8'2"
NHH-H-Top		1458	X		802/1602	SD	4°C		X	X	X	X	X	X							0-5'5"
NHH-H-Rep-Top		1458	X		"	SD	4°C		X	X	X	X	X	X							0-5'5"
NHH-H-Bottom		1458	X		"	SD	4°C		X	X	X	X	X	X							5'5"-7'8"
NHH-I-Top		1548	X		"	SD	4°C		X	X	X	X	X	X							0-8"
NHH-I-Bottom		1548	X		"	SD	4°C		X	X	X	X	X	X							8"-2'6"

Relinquished by: (Print Name)/(Affiliation)

C. Steve Howe / AECOM

Date: 8/14/17

Time: 1922

Signature:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date:

Time:

Received by: (Print Name)/(Affiliation)

Signature:

Received by: (Print Name)/(Affiliation)

Signature:

Received by: (Print Name)/(Affiliation)

Signature:

Date: 8/14/17

Time: 1928

Date: 8/14/17

Time: 2150

Date:

Time:

Analytical Laboratory (Destination):

Sample Shipped Via:

UPS FedEx Courier Other

Temp blank

Yes No

AECOM

CHAIN OF CUSTODY RECORD

L172 8049

Page 1 of 2

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven CT			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°					
Project Number: 60543021			Field Logbook No.:			Grain Size Metals - 602A/471B PCBs - 8082/8210-SIM Pesticides - 8081B PAHs - 8210-SIM TOL - PGO						Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product							
Sampler (Print Name)/(Affiliation): C. Steve Hane AECOM			Chain of Custody Tape Nos.:									Lab I.D.				Remarks			
Signature: C. Steve Hane			Send Results/Report to:									TAT:							
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered							Lab I.D.	Remarks			
NHH-G-Top	8/11/17	0837	X		802/1602	SD	4°C	NA	X	X	X	X	X	X		0-4'3"			
NHH-G-Bottom	8/11/17	0837	X		802/1602	SD	4°C		X	X	X	X	X	X		4'3"-13'8"			
NHH-C-Top		1033	X		802/1602	SD	4°C		X	X	X	X	X	X		0-2'10"			
NHH-C-Bottom		1033	X		802/1602	SD	4°C		X	X	X	X	X	X		2'10"-8'0"			
NHH-B		1157	X		2102/1602	SD	4°C		X	X	X	X	X	X		0-4'2'			
NHH-B-MS		1157	X		2102/1602	SD	4°C		X	X	X	X	X	X		0-4'2'			
NHH-B-MSD		1157	X		2102/1602	SD	4°C		X	X	X	X	X	X		0-4'2'			
NHH-A-Top		1340	X		802/1602	SD	4°C		X	X	X	X	X	X		0-2'2"			
NHH-A-Bottom		1340	X		802	SD	4°C		X							2'2"-9'9"			
NHH-D-Top		1507	X		802/1602	SD	4°C		X	X	X	X	X	X		0-4'9"			
NHH-D-Bottom		1507	X		802/1602	SD	4°C		X	X	X	X	X	X		4'9"-10'4"			
NHH-F-Top		1650	X		802/1602	SD	4°C		X	X	X	X	X	X		0-3'2"			
NHH-F-Rep-Top		1650	X		802/1602	SD	4°C		X	X	X	X	X	X		0-3'2"			
Relinquished by: (Print Name)/(Affiliation) C. Steve Hane AECOM			Date: 8/11/17		Received by: (Print Name)/(Affiliation) [Signature]				Date: 8/11/17		Analytical Laboratory (Destination):								
Signature: [Signature]			Time: 1925		Signature: [Signature]				Time: 1925										
Relinquished by: (Print Name)/(Affiliation) [Signature]			Date: 8/11/17		Received by: (Print Name)/(Affiliation) [Signature]				Date: 8/11/17										
Signature: [Signature]			Time: 2237		Signature: Bethany Beo				Time: 2237		Sample Shipped Via: Temp blank								
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)				Date:										
Signature:			Time:		Signature:				Time:		UPS FedEx Courier Other Yes No								

CHAIN OF CUSTODY RECORD

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[illegible]



ANALYTICAL REPORT

Lab Number:	L1728343
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	09/08/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728343-01	NHH-E-TOP	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17
L1728343-02	NHH-E-BOTTOM	SEDIMENT	NEW HAVEN, CT	08/14/17 08:32	08/14/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics

The WG1036086-4 Laboratory Duplicate RPD for, CI4-BZ#49 (33%), performed on L1728343-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

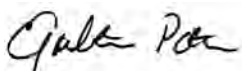
The WG1036086-5/-6 MS/MSD recoveries, performed on L1728343-01, are outside the acceptance criteria for two compounds; however, the associated LCS/LCSD recoveries are within overall method allowances. The results of the native sample are considered to have a potentially high bias for Benzo(b)fluoranthene (121%-MS only) and Fluoranthene (123%-MSD only)

Pesticides

The WG1036085-7 SRM recovery for trans-Nonachlor (367%) and the surrogate BZ198 column B (223%), are above the acceptable criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 09/08/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-01
 Client ID: NHH-E-TOP
 Sample Location: NEW HAVEN, CT

Date Collected: 08/14/17 08:32
 Date Received: 08/14/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/28/17 10:47
 Cleanup Method: EPA 3630
 Cleanup Date: 08/30/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 09/08/17 07:07
 Analyst: GP
 Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	42.3		ug/kg	10.7	5.34	1
Acenaphthylene	45.6		ug/kg	10.7	5.34	1
Acenaphthene	9.42	J	ug/kg	10.7	5.34	1
Fluorene	19.1		ug/kg	10.7	5.34	1
Phenanthrene	125		ug/kg	10.7	5.34	1
Anthracene	36.1		ug/kg	10.7	5.34	1
Fluoranthene	276		ug/kg	10.7	5.34	1
Pyrene	254		ug/kg	10.7	5.34	1
Benz(a)anthracene	135		ug/kg	10.7	5.34	1
Chrysene	169		ug/kg	10.7	5.34	1
Benzo(b)fluoranthene	213		ug/kg	10.7	5.34	1
Benzo(k)fluoranthene	138		ug/kg	10.7	5.34	1
Benzo(a)pyrene	182		ug/kg	10.7	5.34	1
Indeno(1,2,3-cd)Pyrene	152		ug/kg	10.7	5.34	1
Dibenz(a,h)anthracene	34.9		ug/kg	10.7	5.34	1
Benzo(ghi)perylene	172		ug/kg	10.7	5.34	1
Cl2-BZ#8	ND		ug/kg	1.07	0.534	1
Cl3-BZ#18	0.955	J	ug/kg	1.07	0.534	1
Cl3-BZ#28	1.29		ug/kg	1.07	0.534	1
Cl4-BZ#44	2.60		ug/kg	1.07	0.534	1
Cl4-BZ#49	2.31		ug/kg	1.07	0.534	1
Cl4-BZ#52	3.16		ug/kg	1.07	0.534	1
Cl4-BZ#66	2.55		ug/kg	1.07	0.534	1
Cl5-BZ#87	0.683	J	ug/kg	1.07	0.534	1
Cl5-BZ#101	3.78		ug/kg	1.07	0.534	1
Cl5-BZ#105	ND		ug/kg	1.07	0.534	1
Cl5-BZ#118	3.80		ug/kg	1.07	0.534	1
Cl6-BZ#128	1.26		ug/kg	1.07	0.534	1
Cl6-BZ#138	3.72		ug/kg	1.07	0.534	1
Cl6-BZ#153	3.85		ug/kg	1.07	0.534	1



Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-01

Date Collected: 08/14/17 08:32

Client ID: NHH-E-TOP

Date Received: 08/14/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab

CI7-BZ#170	1.06	J	ug/kg	1.07	0.534	1
CI7-BZ#180	1.81		ug/kg	1.07	0.534	1
CI7-BZ#183	0.714	J	ug/kg	1.07	0.534	1
CI7-BZ#184	ND		ug/kg	1.07	0.534	1
CI7-BZ#187	2.51		ug/kg	1.07	0.534	1
CI8-BZ#195	ND		ug/kg	1.07	0.534	1
CI9-BZ#206	1.18		ug/kg	1.07	0.534	1
CI10-BZ#209	0.755	J	ug/kg	1.07	0.534	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	80		30-150
Pyrene-d10	84		30-150
Benzo(b)fluoranthene-d12	82		30-150
DBOB	98		30-150
BZ 198	93		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-02
 Client ID: NHH-E-BOTTOM
 Sample Location: NEW HAVEN, CT

Date Collected: 08/14/17 08:32
 Date Received: 08/14/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 08/28/17 10:47
 Cleanup Method: EPA 3630
 Cleanup Date: 08/30/17

Matrix: Sediment
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 09/08/17 09:14
 Analyst: JT
 Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	113		ug/kg	10.5	5.24	1
Acenaphthylene	78.9		ug/kg	10.5	5.24	1
Acenaphthene	22.2		ug/kg	10.5	5.24	1
Fluorene	58.8		ug/kg	10.5	5.24	1
Phenanthrene	298		ug/kg	10.5	5.24	1
Anthracene	65.0		ug/kg	10.5	5.24	1
Fluoranthene	517		ug/kg	10.5	5.24	1
Pyrene	456		ug/kg	10.5	5.24	1
Benz(a)anthracene	233		ug/kg	10.5	5.24	1
Chrysene	290		ug/kg	10.5	5.24	1
Benzo(b)fluoranthene	339		ug/kg	10.5	5.24	1
Benzo(k)fluoranthene	183		ug/kg	10.5	5.24	1
Benzo(a)pyrene	276		ug/kg	10.5	5.24	1
Indeno(1,2,3-cd)Pyrene	204		ug/kg	10.5	5.24	1
Dibenz(a,h)anthracene	47.8		ug/kg	10.5	5.24	1
Benzo(ghi)perylene	246		ug/kg	10.5	5.24	1
Cl2-BZ#8	ND		ug/kg	1.05	0.524	1
Cl3-BZ#18	2.27		ug/kg	1.05	0.524	1
Cl3-BZ#28	1.78		ug/kg	1.05	0.524	1
Cl4-BZ#44	4.46		ug/kg	1.05	0.524	1
Cl4-BZ#49	5.33		ug/kg	1.05	0.524	1
Cl4-BZ#52	5.05		ug/kg	1.05	0.524	1
Cl4-BZ#66	4.15		ug/kg	1.05	0.524	1
Cl5-BZ#87	ND		ug/kg	1.05	0.524	1
Cl5-BZ#101	6.87		ug/kg	1.05	0.524	1
Cl5-BZ#105	0.878	J	ug/kg	1.05	0.524	1
Cl5-BZ#118	5.16		ug/kg	1.05	0.524	1
Cl6-BZ#128	1.08		ug/kg	1.05	0.524	1
Cl6-BZ#138	4.85		ug/kg	1.05	0.524	1
Cl6-BZ#153	6.28		ug/kg	1.05	0.524	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-02
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	1.72		ug/kg	1.05	0.524	1
CI7-BZ#180	2.78		ug/kg	1.05	0.524	1
CI7-BZ#183	1.03	J	ug/kg	1.05	0.524	1
CI7-BZ#184	ND		ug/kg	1.05	0.524	1
CI7-BZ#187	3.36		ug/kg	1.05	0.524	1
CI8-BZ#195	0.693	J	ug/kg	1.05	0.524	1
CI9-BZ#206	1.44		ug/kg	1.05	0.524	1
CI10-BZ#209	1.16		ug/kg	1.05	0.524	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	82		30-150
Pyrene-d10	87		30-150
Benzo(b)fluoranthene-d12	82		30-150
DBOB	97		30-150
BZ 198	100		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 09/08/17 02:22

Extraction Date: 08/28/17 10:47

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 08/30/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1036086-1					
Naphthalene	ND		ug/kg	5.00	2.50
Acenaphthylene	ND		ug/kg	5.00	2.50
Acenaphthene	ND		ug/kg	5.00	2.50
Fluorene	ND		ug/kg	5.00	2.50
Phenanthrene	ND		ug/kg	5.00	2.50
Anthracene	ND		ug/kg	5.00	2.50
Fluoranthene	ND		ug/kg	5.00	2.50
Pyrene	ND		ug/kg	5.00	2.50
Benz(a)anthracene	ND		ug/kg	5.00	2.50
Chrysene	ND		ug/kg	5.00	2.50
Benzo(b)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(k)fluoranthene	ND		ug/kg	5.00	2.50
Benzo(a)pyrene	ND		ug/kg	5.00	2.50
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	2.50
Dibenz(a,h)anthracene	ND		ug/kg	5.00	2.50
Benzo(ghi)perylene	ND		ug/kg	5.00	2.50
Cl2-BZ#8	ND		ug/kg	0.500	0.250
Cl3-BZ#18	ND		ug/kg	0.500	0.250
Cl3-BZ#28	ND		ug/kg	0.500	0.250
Cl4-BZ#44	ND		ug/kg	0.500	0.250
Cl4-BZ#49	ND		ug/kg	0.500	0.250
Cl4-BZ#52	ND		ug/kg	0.500	0.250
Cl4-BZ#66	ND		ug/kg	0.500	0.250
Cl5-BZ#87	ND		ug/kg	0.500	0.250
Cl5-BZ#101	ND		ug/kg	0.500	0.250
Cl5-BZ#105	ND		ug/kg	0.500	0.250
Cl5-BZ#118	ND		ug/kg	0.500	0.250
Cl6-BZ#128	ND		ug/kg	0.500	0.250
Cl6-BZ#138	ND		ug/kg	0.500	0.250

Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 09/08/17 02:22

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 08/28/17 10:47

Cleanup Method: EPA 3630

Cleanup Date: 08/30/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1036086-1					
Cl6-BZ#153	ND		ug/kg	0.500	0.250
Cl7-BZ#170	ND		ug/kg	0.500	0.250
Cl7-BZ#180	ND		ug/kg	0.500	0.250
Cl7-BZ#183	ND		ug/kg	0.500	0.250
Cl7-BZ#184	ND		ug/kg	0.500	0.250
Cl7-BZ#187	ND		ug/kg	0.500	0.250
Cl8-BZ#195	ND		ug/kg	0.500	0.250
Cl9-BZ#206	ND		ug/kg	0.500	0.250
Cl10-BZ#209	ND		ug/kg	0.500	0.250

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	44		30-150
Pyrene-d10	48		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	51		30-150
BZ 198	48		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1036086-2 WG1036086-3								
Naphthalene	79		84		50-120	6		30
Acenaphthylene	78		84		50-120	7		30
Acenaphthene	74		80		50-120	8		30
Fluorene	78		84		50-120	7		30
Phenanthrene	79		87		50-120	10		30
Anthracene	78		84		50-120	7		30
Fluoranthene	80		88		50-120	10		30
Pyrene	74		83		50-120	11		30
Benz(a)anthracene	83		93		50-120	11		30
Chrysene	80		90		50-120	12		30
Benzo(b)fluoranthene	81		90		50-120	11		30
Benzo(k)fluoranthene	85		93		50-120	9		30
Benzo(a)pyrene	83		92		50-120	10		30
Indeno(1,2,3-cd)Pyrene	81		85		50-120	5		30
Dibenz(a,h)anthracene	80		88		50-120	10		30
Benzo(ghi)perylene	84		94		50-120	11		30
Cl2-BZ#8	86		92		50-120	7		30
Cl3-BZ#18	85		92		50-120	8		30
Cl3-BZ#28	84		94		50-120	11		30
Cl4-BZ#44	87		96		50-120	10		30
Cl4-BZ#49	85		92		50-120	8		30
Cl4-BZ#52	85		93		50-120	9		30
Cl4-BZ#66	85		94		50-120	10		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1036086-2 WG1036086-3								
Cl5-BZ#87	86		95		50-120	10		30
Cl5-BZ#101	88		96		50-120	9		30
Cl5-BZ#105	88		97		50-120	10		30
Cl5-BZ#118	84		92		50-120	9		30
Cl6-BZ#128	88		95		50-120	8		30
Cl6-BZ#138	86		94		50-120	9		30
Cl6-BZ#153	86		95		50-120	10		30
Cl7-BZ#170	86		96		50-120	11		30
Cl7-BZ#180	86		93		50-120	8		30
Cl7-BZ#183	82		90		50-120	9		30
Cl7-BZ#184	86		94		50-120	9		30
Cl7-BZ#187	89		97		50-120	9		30
Cl8-BZ#195	87		95		50-120	9		30
Cl9-BZ#206	85		93		50-120	9		30
Cl10-BZ#209	89		98		50-120	10		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	82		87		30-150
Pyrene-d10	83		91		30-150
Benzo(b)fluoranthene-d12	88		96		30-150
DBOB	91		96		30-150
BZ 198	83		90		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NHH-E-TOP Associated sample(s): 01-02 QC Batch ID: WG1036086-5 WG1036086-6 QC Sample: L1728343-01 Client												
Naphthalene	42.3	549	536	90		521	88		50-120	3		30
Acenaphthylene	45.6	549	532	89		516	86		50-120	3		30
Acenaphthene	9.42J	549	445	81		436	80		50-120	2		30
Fluorene	19.1	549	469	82		455	80		50-120	3		30
Phenanthrene	125	549	700	105		682	102		50-120	3		30
Anthracene	36.1	549	469	79		460	78		50-120	2		30
Fluoranthene	276	549	854	105		944	123	Q	50-120	10		30
Pyrene	254	549	806	101		842	108		50-120	4		30
Benz(a)anthracene	135	549	728	108		715	106		50-120	2		30
Chrysene	169	549	692	95		684	95		50-120	1		30
Benzo(b)fluoranthene	213	549	876	121	Q	827	113		50-120	6		30
Benzo(k)fluoranthene	138	549	588	82		558	77		50-120	5		30
Benzo(a)pyrene	182	549	746	103		700	95		50-120	6		30
Indeno(1,2,3-cd)Pyrene	152	549	717	103		659	93		50-120	8		30
Dibenz(a,h)anthracene	34.9	549	530	90		496	85		50-120	7		30
Benzo(ghi)perylene	172	549	759	107		711	99		50-120	7		30
Cl2-BZ#8	ND	110	92.9	85		94.6	87		50-120	2		30
Cl3-BZ#18	0.955J	110	97.3	89		97.6	90		50-120	0		30
Cl3-BZ#28	1.29	110	99.5	90		99.1	90		50-120	0		30
Cl4-BZ#44	2.60	110	103	92		105	94		50-120	2		30
Cl4-BZ#49	2.31	110	89.8	80		92.6	83		50-120	3		30
Cl4-BZ#52	3.16	110	117	104		119	106		50-120	2		30
Cl4-BZ#66	2.55	110	104	93		108	97		50-120	4		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NHH-E-TOP Associated sample(s): 01-02 QC Batch ID: WG1036086-5 WG1036086-6 QC Sample: L1728343-01 Client												
CI5-BZ#87	0.683J	110	96.9	88		100	92		50-120	3		30
CI5-BZ#101	3.78	110	104	91		107	95		50-120	3		30
CI5-BZ#105	ND	110	94.2	86		97.3	89		50-120	3		30
CI5-BZ#118	3.80	110	100	88		104	92		50-120	4		30
CI6-BZ#128	1.26	110	101	91		104	94		50-120	3		30
CI6-BZ#138	3.72	110	106	93		110	98		50-120	4		30
CI6-BZ#153	3.85	110	100	88		104	92		50-120	4		30
CI7-BZ#170	1.06J	110	103	94		107	98		50-120	4		30
CI7-BZ#180	1.81	110	101	90		104	94		50-120	3		30
CI7-BZ#183	0.714J	110	87.0	79		88.9	82		50-120	2		30
CI7-BZ#184	ND	110	95.9	87		98.2	90		50-120	2		30
CI7-BZ#187	2.51	110	114	102		116	104		50-120	2		30
CI8-BZ#195	ND	110	103	94		107	98		50-120	4		30
CI9-BZ#206	1.18	110	103	93		108	98		50-120	5		30
CI10-BZ#209	0.755J	110	107	98		110	101		50-120	3		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	86		84		30-150
BZ 198	100		105		30-150
Benzo(b)fluoranthene-d12	87		81		30-150
DBOB	98		101		30-150
Pyrene-d10	87		84		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036086-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP						
Naphthalene	42.3	55.1	ug/kg	26		30
Acenaphthylene	45.6	53.8	ug/kg	16		30
Acenaphthene	9.42J	11.4	ug/kg	NC		30
Fluorene	19.1	25.9	ug/kg	30		30
Phenanthrene	125	164	ug/kg	27		30
Anthracene	36.1	42.6	ug/kg	17		30
Fluoranthene	276	372	ug/kg	30		30
Pyrene	254	320	ug/kg	23		30
Benz(a)anthracene	135	169	ug/kg	22		30
Chrysene	169	201	ug/kg	17		30
Benzo(b)fluoranthene	213	253	ug/kg	17		30
Benzo(k)fluoranthene	138	160	ug/kg	15		30
Benzo(a)pyrene	182	214	ug/kg	16		30
Indeno(1,2,3-cd)Pyrene	152	164	ug/kg	8		30
Dibenz(a,h)anthracene	34.9	36.7	ug/kg	5		30
Benzo(ghi)perylene	172	200	ug/kg	15		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	0.955J	1.38	ug/kg	NC		30
Cl3-BZ#28	1.29	1.48	ug/kg	14		30
Cl4-BZ#44	2.60	2.89	ug/kg	11		30
Cl4-BZ#49	2.31	3.21	ug/kg	33	Q	30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036086-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP						
Cl4-BZ#52	3.16	4.27	ug/kg	30		30
Cl4-BZ#66	2.55	3.45	ug/kg	30		30
Cl5-BZ#87	0.683J	0.996J	ug/kg	NC		30
Cl5-BZ#101	3.78	4.77	ug/kg	23		30
Cl5-BZ#105	ND	ND	ug/kg	NC		30
Cl5-BZ#118	3.80	4.67	ug/kg	21		30
Cl6-BZ#128	1.26	1.14	ug/kg	10		30
Cl6-BZ#138	3.72	4.67	ug/kg	23		30
Cl6-BZ#153	3.85	5.15	ug/kg	29		30
Cl7-BZ#170	1.06J	1.60	ug/kg	NC		30
Cl7-BZ#180	1.81	2.22	ug/kg	20		30
Cl7-BZ#183	0.714J	0.782J	ug/kg	NC		30
Cl7-BZ#184	ND	ND	ug/kg	NC		30
Cl7-BZ#187	2.51	2.97	ug/kg	17		30
Cl8-BZ#195	ND	ND	ug/kg	NC		30
Cl9-BZ#206	1.18	1.28	ug/kg	8		30
Cl10-BZ#209	0.755J	0.741J	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	80		81		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036086-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	84		85		30-150
Benzo(b)fluoranthene-d12	82		80		30-150
DBOB	98		101		30-150
BZ 198	93		100		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1036086-7

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	76		40-140
Fluoranthene	75		40-140
Pyrene	62		40-140
Benz(a)anthracene	72		40-140
Chrysene	87		40-140
Benzo(b)fluoranthene	84		40-140
Benzo(k)fluoranthene	101		40-140
Benzo(a)pyrene	60		40-140
Indeno(1,2,3-cd)Pyrene	65		40-140
Dibenz(a,h)anthracene	122		40-140
Benzo(ghi)perylene	77		40-140
Cl2-BZ#8	76		40-140
Cl3-BZ#18	87		40-140
Cl3-BZ#28	58		40-140
Cl4-BZ#44	95		40-140
Cl4-BZ#49	77		40-140
Cl4-BZ#52	112		40-140
Cl4-BZ#66	57		40-140
Cl5-BZ#87	74		40-140
Cl5-BZ#101	83		40-140
Cl5-BZ#105	85		40-140
Cl5-BZ#118	73		40-140
Cl6-BZ#128	108		40-140
Cl6-BZ#138	92		40-140
Cl6-BZ#153	66		40-140
Cl7-BZ#170	103		40-140
Cl7-BZ#180	88		40-140
Cl7-BZ#183	70		40-140
Cl7-BZ#187	89		40-140
Cl9-BZ#206	82		40-140
Cl10-BZ#209	98		40-140
2-Methylnaphthalene-d10 (Surrogate)	82		30-150
Pyrene-d10 (Surrogate)	90		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	81		30-150
DBOB (Surrogate)	107		30-150
BZ 198 (Surrogate)	85		30-150

PESTICIDES

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-01
Client ID: NHH-E-TOP
Sample Location: NEW HAVEN, CT

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/28/17 10:47
Cleanup Method: EPA 3630
Cleanup Date: 08/30/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 09/01/17 15:33
Analyst: DP
Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.07	1.07	1	A
gamma-BHC	ND		ug/kg	0.534	0.534	1	A
Heptachlor	ND		ug/kg	0.534	0.534	1	A
Aldrin	ND		ug/kg	0.534	0.534	1	A
Heptachlor epoxide	ND		ug/kg	1.07	1.07	1	B
Oxychlordane	ND		ug/kg	1.07	1.07	1	B
trans-Chlordane	1.92		ug/kg	0.534	0.534	1	A
Endosulfan I	ND		ug/kg	0.534	0.534	1	A
cis-Chlordane	ND		ug/kg	0.534	0.534	1	A
trans-Nonachlor	ND		ug/kg	0.534	0.534	1	A
4,4'-DDE	2.92		ug/kg	0.534	0.534	1	A
Dieldrin	0.643	IP	ug/kg	0.534	0.534	1	A
Endrin	ND		ug/kg	0.534	0.534	1	A
Endosulfan II	ND		ug/kg	0.534	0.534	1	A
4,4'-DDD	0.756		ug/kg	0.534	0.534	1	A
cis-Nonachlor	ND		ug/kg	0.534	0.534	1	A
4,4'-DDT	2.10	P	ug/kg	0.534	0.534	1	B
Methoxychlor	ND		ug/kg	5.34	5.34	1	A
Toxaphene	ND		ug/kg	26.8	26.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		30-150	A
BZ 198	87		30-150	A
DBOB	66		30-150	B
BZ 198	94		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-02
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 08/28/17 10:47
Cleanup Method: EPA 3630
Cleanup Date: 08/30/17

Matrix: Sediment
Analytical Method: 1,8081B
Analytical Date: 09/01/17 17:49
Analyst: DP
Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.05	1.05	1	A
gamma-BHC	ND		ug/kg	0.524	0.524	1	A
Heptachlor	ND		ug/kg	0.524	0.524	1	A
Aldrin	ND		ug/kg	0.524	0.524	1	A
Heptachlor epoxide	ND		ug/kg	1.05	1.05	1	B
Oxychlordane	ND		ug/kg	1.05	1.05	1	B
trans-Chlordane	1.46	IP	ug/kg	0.524	0.524	1	A
Endosulfan I	ND		ug/kg	0.524	0.524	1	A
cis-Chlordane	ND		ug/kg	0.524	0.524	1	A
trans-Nonachlor	ND		ug/kg	0.524	0.524	1	A
4,4'-DDE	4.75		ug/kg	0.524	0.524	1	A
Dieldrin	0.563	IP	ug/kg	0.524	0.524	1	A
Endrin	ND		ug/kg	0.524	0.524	1	A
Endosulfan II	ND		ug/kg	0.524	0.524	1	A
4,4'-DDD	1.68		ug/kg	0.524	0.524	1	A
cis-Nonachlor	ND		ug/kg	0.524	0.524	1	A
4,4'-DDT	ND		ug/kg	0.524	0.524	1	A
Methoxychlor	ND		ug/kg	5.24	5.24	1	A
Toxaphene	ND		ug/kg	26.3	26.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	77		30-150	A
BZ 198	89		30-150	A
DBOB	68		30-150	B
BZ 198	99		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 09/01/17 13:17
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 08/28/17 10:47
Cleanup Method: EPA 3630
Cleanup Date: 08/30/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-02 Batch: WG1036085-1						
Hexachlorobenzene	ND		ug/kg	0.500	0.500	A
gamma-BHC	ND		ug/kg	0.250	0.250	A
Heptachlor	ND		ug/kg	0.250	0.250	A
Aldrin	ND		ug/kg	0.250	0.250	A
trans-Chlordane	ND		ug/kg	0.250	0.250	A
Endosulfan I	ND		ug/kg	0.250	0.250	A
cis-Chlordane	ND		ug/kg	0.250	0.250	A
trans-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDE	ND		ug/kg	0.250	0.250	A
Dieldrin	ND		ug/kg	0.250	0.250	A
Endrin	ND		ug/kg	0.250	0.250	A
Endosulfan II	ND		ug/kg	0.250	0.250	A
4,4'-DDD	ND		ug/kg	0.250	0.250	A
cis-Nonachlor	ND		ug/kg	0.250	0.250	A
4,4'-DDT	ND		ug/kg	0.250	0.250	A
Methoxychlor	ND		ug/kg	2.50	2.50	A
Toxaphene	ND		ug/kg	12.6	12.6	A
Heptachlor epoxide	ND		ug/kg	0.500	0.500	B
Oxychlordane	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	41		30-150	A
BZ 198	45		30-150	A
DBOB	39		30-150	B
BZ 198	52		30-150	B



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 Batch: WG1036085-2 WG1036085-3									
Hexachlorobenzene	59		73		50-120	21		30	A
gamma-BHC	64		77		50-120	18		30	A
Heptachlor	63		79		50-120	23		30	A
Aldrin	64		78		50-120	20		30	A
trans-Chlordane	71		88		50-120	21		30	A
Endosulfan I	70		86		50-120	21		30	A
cis-Chlordane	66		83		50-120	23		30	A
trans-Nonachlor	66		83		50-120	23		30	A
4,4'-DDE	80		101		50-120	23		30	A
Dieldrin	81		99		50-120	20		30	A
Endrin	67		85		50-120	24		30	A
4,4'-DDD	81		100		50-120	21		30	A
cis-Nonachlor	69		87		50-120	23		30	A
4,4'-DDT	85		105		50-120	21		30	A
Methoxychlor	85		94		50-120	10		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	66		77		30-150	A
BZ 198	93		109		30-150	A
DBOB	63		73		30-150	B
BZ 198	79		102		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 Batch: WG1036085-2 WG1036085-3									
Heptachlor epoxide	70		84		50-120	18		30	B
Oxychlordane	67		82		50-120	20		30	B
Endosulfan II	72		84		50-120	15		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	66		77		30-150	A
BZ 198	93		109		30-150	A
DBOB	63		73		30-150	B
BZ 198	79		102		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab NHH-E-TOP Associated sample(s): 01-02 QC Batch ID: WG1036085-5 WG1036085-6 QC Sample: L1728343-01 Client ID:													
Hexachlorobenzene	ND	110	73.5	67		73.3	67		50-120	0		30	A
gamma-BHC	ND	110	76.4	70		85.8	79		50-120	12		30	A
Heptachlor	ND	110	76.5	70		81.7	75		50-120	7		30	A
Aldrin	ND	110	76.4	70		82.6	76		50-120	8		30	A
Heptachlor epoxide	ND	110	77.0	70		81.9	75		50-120	6		30	B
Oxychlordane	ND	110	74.5	68		80.6	74		50-120	8		30	B
trans-Chlordane	1.92	110	87.7	78		94.9	85		50-120	8		30	A
Endosulfan I	ND	110	84.4	77		91.3	84		50-120	8		30	A
cis-Chlordane	ND	110	79.7	73		86.4	79		50-120	8		30	A
trans-Nonachlor	ND	110	79.4	72		86.0	79		50-120	8		30	A
4,4'-DDE	2.92	110	107	95		114	102		50-120	6		30	A
Dieldrin	0.643	110	93.2	84		101	92		50-120	8		30	A
Endrin	ND	110	85.3	78		92.4	85		50-120	8		30	A
Endosulfan II	ND	110	77.5	71		84.1	77		50-120	8		30	B
4,4'-DDD	0.756	110	97.1	88		106	97		50-120	9		30	A
cis-Nonachlor	ND	110	81.7	75		88.5	81		50-120	8		30	A
4,4'-DDT	ND	110	98.7	89		106	96		50-120	7		30	A
Methoxychlor	ND	110	96.7	88		103	95		50-120	6		30	A

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	86		91		30-150	A
DBOB	72		74		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1728343**Project Number:** 60543021**Report Date:** 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036085-5 WG1036085-6 QC Sample: L1728343-01 Client ID: NHH-E-TOP												

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	91		101		30-150	B
DBOB	61		65		30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036085-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	1.92	2.58	ug/kg	29		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	2.92	3.36	ug/kg	14		30 A
Dieldrin	0.643	0.591P	ug/kg	8		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	0.756	1.02	ug/kg	30		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	2.10	2.23P	ug/kg	6		30 B
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036085-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		71		30-150	A
BZ 198	87		87		30-150	A
DBOB	66		64		30-150	B
BZ 198	94		97		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1036085-7

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	91		40-140
cis-Chlordane	113		40-140
trans-Nonachlor	367	Q	40-140
DBOB (Surrogate)	60		30-150
DBOB (Surrogate)	66		30-150
BZ 198 (Surrogate)	111		30-150
BZ 198 (Surrogate)	223	Q	30-150

METALS

Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-01

Date Collected: 08/14/17 08:32

Client ID: NHH-E-TOP

Date Received: 08/14/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 44%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.20		mg/kg	0.217	0.029	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Cadmium, Total	0.889		mg/kg	0.087	0.012	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Chromium, Total	88.1		mg/kg	0.869	0.203	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Copper, Total	106		mg/kg	0.869	0.084	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Lead, Total	64.2		mg/kg	0.261	0.064	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Mercury, Total	0.390		mg/kg	0.021	0.003	5	09/02/17 10:13	09/05/17 11:41	EPA 7474	1,7474	LC
Nickel, Total	29.0		mg/kg	0.435	0.116	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM
Zinc, Total	202		mg/kg	4.35	1.13	2	08/15/17 22:15	08/22/17 17:31	EPA 3050B	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-02

Date Collected: 08/14/17 08:32

Client ID: NHH-E-BOTTOM

Date Received: 08/14/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Sediment

Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	9.69		mg/kg	0.205	0.027	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Cadmium, Total	1.44		mg/kg	0.082	0.011	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Chromium, Total	91.9		mg/kg	0.821	0.192	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Copper, Total	140		mg/kg	0.821	0.080	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Lead, Total	58.1		mg/kg	0.246	0.060	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Mercury, Total	0.499		mg/kg	0.023	0.003	5	09/02/17 10:13	09/05/17 11:51	EPA 7474	1,7474	LC
Nickel, Total	21.4		mg/kg	0.410	0.110	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM
Zinc, Total	223		mg/kg	4.10	1.07	2	08/15/17 22:15	08/22/17 17:35	EPA 3050B	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1728343

Project Number: 60543021

Report Date: 09/08/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1032246-1										
Arsenic, Total	ND		mg/kg	0.100	0.013	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.005	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.094	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Copper, Total	ND		mg/kg	0.400	0.039	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Lead, Total	ND		mg/kg	0.120	0.029	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Nickel, Total	ND		mg/kg	0.200	0.053	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM
Zinc, Total	ND		mg/kg	2.00	0.520	2	08/15/17 22:15	08/22/17 16:14	1,6020A	AM

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1036957-1										
Mercury, Total	ND		mg/kg	0.013	0.002	5	09/02/17 10:13	09/05/17 11:35	1,7474	LC

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1032246-2 SRM Lot Number: D093-540								
Arsenic, Total	92		-		70-130	-		20
Cadmium, Total	92		-		83-117	-		20
Chromium, Total	92		-		80-120	-		20
Copper, Total	88		-		82-118	-		20
Lead, Total	87		-		82-117	-		20
Nickel, Total	91		-		83-117	-		20
Zinc, Total	88		-		83-117	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1036957-2 SRM Lot Number: D093-540								
Mercury, Total	95		-		72-128	-		20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1032246-3 WG1032246-4 QC Sample: L1726857-01 Client ID: MS Sample												
Arsenic, Total	4.04	10.2	13.6	93		13.7	95		75-125	1		20
Cadmium, Total	0.039J	4.36	4.72	108		4.55	106		75-125	4		20
Chromium, Total	27.3	17.1	43.7	96		47.4	119		75-125	8		20
Copper, Total	7.39	21.3	28.8	100		29.5	105		75-125	2		20
Lead, Total	4.19	43.6	46.4	97		47.1	100		75-125	1		20
Nickel, Total	16.3	42.7	58.2	98		60.0	103		75-125	3		20
Zinc, Total	22.7	42.7	64.7	98		68.3	108		75-125	5		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1032246-7 WG1032246-8 QC Sample: L1728049-22 Client ID: MS Sample												
Arsenic, Total	11.1	20.8	31.3	97		29.9	88		75-125	5		20
Cadmium, Total	1.12	8.86	10.4	105		10.2	100		75-125	2		20
Chromium, Total	94.2	34.8	164	201	Q	132	106		75-125	22	Q	20
Copper, Total	184.	43.4	288	239	Q	220	81		75-125	27	Q	20
Lead, Total	63.4	88.6	154	102		140	84		75-125	10		20
Nickel, Total	24.5	86.9	111	100		108	94		75-125	3		20
Zinc, Total	246.	86.9	358	129	Q	316	78		75-125	12		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036957-3 WG1036957-4 QC Sample: L1728343-01 Client ID: NHH-E-TOP												
Mercury, Total	0.390	1.1	1.60	110		1.58	107		80-120	1		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1032246-9 QC Sample: L1728049-22 Client ID: DUP Sample						
Arsenic, Total	11.1	11.9	mg/kg	7		20
Cadmium, Total	1.12	1.08	mg/kg	4		20
Chromium, Total	94.2	99.1	mg/kg	5		20
Copper, Total	184.	191	mg/kg	4		20
Lead, Total	63.4	69.9	mg/kg	10		20
Nickel, Total	24.5	26.3	mg/kg	7		20
Zinc, Total	246.	259	mg/kg	5		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1036957-5 QC Sample: L1728343-01 Client ID: NHH-E-TOP						
Mercury, Total	0.390	0.401	mg/kg	3		20

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
Report Date: 09/08/17

SAMPLE RESULTS

Lab ID: L1728343-01
Client ID: NHH-E-TOP
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.19		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.30		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	43.9		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV
Moisture	56.1		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
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SAMPLE RESULTS

Lab ID: L1728343-02
Client ID: NHH-E-BOTTOM
Sample Location: NEW HAVEN, CT
Matrix: Sediment

Date Collected: 08/14/17 08:32
Date Received: 08/14/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	2.32		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	2.34		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP
General Chemistry - Mansfield Lab										
Solids, Total	46.6		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV
Moisture	53.4		%	0.100	0.100	1	-	08/23/17 09:10	121,2540G	BV



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Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab for sample(s): 01-02 Batch: WG1038564-1										
Total Organic Carbon (Rep1)	ND		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP
Total Organic Carbon (Rep2)	ND		%	0.010	0.010	1	-	09/05/17 00:00	1,9060A	SP



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 Batch: WG1038564-2								
Total Organic Carbon (Rep1)	94		-		75-125	-		25
Total Organic Carbon (Rep2)	92		-		75-125	-		25

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

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Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1038564-4 QC Sample: L1726936-04 Client ID: MS Sample												
Total Organic Carbon (Rep1)	0.912	1.76	2.65	99		-	-		75-125	-		25
Total Organic Carbon (Rep2)	0.911	1.51	2.47	103		-	-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1038564-5 QC Sample: L1726936-13 Client ID: MS Sample												
Total Organic Carbon (Rep1)	0.634	1.22	1.77	93		-	-		75-125	-		25
Total Organic Carbon (Rep2)	0.703	1.26	1.92	97		-	-		75-125	-		25

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728343

Report Date: 09/08/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1034557-1 QC Sample: L1728049-22 Client ID: DUP Sample						
Solids, Total	44.6	40.5	%	10		10
Moisture	55.4	59.5	%	7		10
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1038564-3 QC Sample: L1726936-04 Client ID: DUP Sample						
Total Organic Carbon (Rep1)	0.912	0.943	%	3		25
Total Organic Carbon (Rep2)	0.911	0.906	%	1		25

Project Name: USACE/NHH FNP**Lab Number:** L1728343**Project Number:** 60543021**Report Date:** 09/08/17**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728343-01A	Glass 500ml/16oz unpreserved	A	NA		5.7	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1728343-02A	Glass 500ml/16oz unpreserved	A	NA		5.7	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728343
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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No – see Narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	01MS: Benzo(b)fluoranthene @ 121% 01MSD: Fluoranthene @ 123%	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	Trans-Nonachlor @ 367%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	SRM = BZ198 – 223% column B	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	No	Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)	Yes		In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.



ANALYTICAL REPORT

Lab Number:	L1728961
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE-NHH FNP
Project Number:	60543021
Report Date:	11/06/17

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728961-01	NHH-EB-NISK-081717	WATER	NEW HAVEN, CT	08/17/17 11:35	08/17/17

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

Case Narrative (continued)

Report Submission

This report replaces the report issued on September 8, 2017. The RIM QC Summary Forms are attached as an addendum.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.


Pesticides

L1728961-01: The surrogate recovery is outside the individual acceptance criteria for BZ198 (174%), but within the overall method allowances.

WG1034932-3 (LCSD): The surrogate recovery is outside the individual acceptance criteria for BZ198 (193%), but within the overall method allowances.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 11/06/17

ORGANICS

SEMIVOLATILES

Project Name: USACE-NHH FNP**Lab Number:** L1728961**Project Number:** 60543021**Report Date:** 11/06/17**SAMPLE RESULTS**

Lab ID: L1728961-01
 Client ID: NHH-EB-NISK-081717
 Sample Location: NEW HAVEN, CT

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/28/17 22:00
 Analyst: JT

Date Collected: 08/17/17 11:35
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 05:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	19.1		ng/l	10.3	5.15	1
Acenaphthylene	ND		ng/l	10.3	5.15	1
Acenaphthene	ND		ng/l	10.3	5.15	1
Fluorene	ND		ng/l	10.3	5.15	1
Phenanthrene	ND		ng/l	10.3	5.15	1
Anthracene	ND		ng/l	10.3	5.15	1
Fluoranthene	ND		ng/l	10.3	5.15	1
Pyrene	ND		ng/l	10.3	5.15	1
Benz(a)anthracene	ND		ng/l	10.3	5.15	1
Chrysene	ND		ng/l	10.3	5.15	1
Benzo(b)fluoranthene	ND		ng/l	10.3	5.15	1
Benzo(k)fluoranthene	ND		ng/l	10.3	5.15	1
Benzo(a)pyrene	ND		ng/l	10.3	5.15	1
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.3	5.15	1
Dibenz(a,h)anthracene	ND		ng/l	10.3	5.15	1
Benzo(ghi)perylene	ND		ng/l	10.3	5.15	1
Cl2-BZ#8	ND		ng/l	1.03	0.515	1
Cl3-BZ#18	ND		ng/l	1.03	0.515	1
Cl3-BZ#28	ND		ng/l	1.03	0.515	1
Cl4-BZ#44	ND		ng/l	1.03	0.515	1
Cl4-BZ#49	ND		ng/l	1.03	0.515	1
Cl4-BZ#52	ND		ng/l	1.03	0.515	1
Cl4-BZ#66	ND		ng/l	1.03	0.515	1
Cl5-BZ#87	ND		ng/l	1.03	0.515	1
Cl5-BZ#101	ND		ng/l	1.03	0.515	1
Cl5-BZ#105	ND		ng/l	1.03	0.515	1
Cl5-BZ#118	ND		ng/l	1.03	0.515	1
Cl6-BZ#128	ND		ng/l	1.03	0.515	1
Cl6-BZ#138	ND		ng/l	1.03	0.515	1
Cl6-BZ#153	ND		ng/l	1.03	0.515	1



Project Name: USACE-NHH FNP**Lab Number:** L1728961**Project Number:** 60543021**Report Date:** 11/06/17**SAMPLE RESULTS****Lab ID:** L1728961-01**Date Collected:** 08/17/17 11:35**Client ID:** NHH-EB-NISK-081717**Date Received:** 08/17/17**Sample Location:** NEW HAVEN, CT**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ng/l	1.03	0.515	1
CI7-BZ#180	ND		ng/l	1.03	0.515	1
CI7-BZ#183	ND		ng/l	1.03	0.515	1
CI7-BZ#184	ND		ng/l	1.03	0.515	1
CI7-BZ#187	ND		ng/l	1.03	0.515	1
CI8-BZ#195	ND		ng/l	1.03	0.515	1
CI9-BZ#206	ND		ng/l	1.03	0.515	1
CI10-BZ#209	ND		ng/l	1.03	0.515	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	67		30-150
BZ 198	62		30-150

Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/28/17 18:56

Extraction Date: 08/24/17 05:00

Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1034933-1					
Naphthalene	ND		ng/l	10.0	5.00
Acenaphthylene	ND		ng/l	10.0	5.00
Acenaphthene	ND		ng/l	10.0	5.00
Fluorene	ND		ng/l	10.0	5.00
Phenanthrene	ND		ng/l	10.0	5.00
Anthracene	ND		ng/l	10.0	5.00
Fluoranthene	ND		ng/l	10.0	5.00
Pyrene	ND		ng/l	10.0	5.00
Benz(a)anthracene	ND		ng/l	10.0	5.00
Chrysene	ND		ng/l	10.0	5.00
Benzo(b)fluoranthene	ND		ng/l	10.0	5.00
Benzo(k)fluoranthene	ND		ng/l	10.0	5.00
Benzo(a)pyrene	ND		ng/l	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.0	5.00
Dibenz(a,h)anthracene	ND		ng/l	10.0	5.00
Benzo(ghi)perylene	ND		ng/l	10.0	5.00
Cl2-BZ#8	ND		ng/l	1.00	0.500
Cl3-BZ#18	ND		ng/l	1.00	0.500
Cl3-BZ#28	ND		ng/l	1.00	0.500
Cl4-BZ#44	ND		ng/l	1.00	0.500
Cl4-BZ#49	ND		ng/l	1.00	0.500
Cl4-BZ#52	ND		ng/l	1.00	0.500
Cl4-BZ#66	ND		ng/l	1.00	0.500
Cl5-BZ#87	ND		ng/l	1.00	0.500
Cl5-BZ#101	ND		ng/l	1.00	0.500
Cl5-BZ#105	ND		ng/l	1.00	0.500
Cl5-BZ#118	ND		ng/l	1.00	0.500
Cl6-BZ#128	ND		ng/l	1.00	0.500
Cl6-BZ#138	ND		ng/l	1.00	0.500

Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/28/17 18:56

Extraction Date: 08/24/17 05:00

Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1034933-1					
Cl6-BZ#153	ND		ng/l	1.00	0.500
Cl7-BZ#170	ND		ng/l	1.00	0.500
Cl7-BZ#180	ND		ng/l	1.00	0.500
Cl7-BZ#183	ND		ng/l	1.00	0.500
Cl7-BZ#184	ND		ng/l	1.00	0.500
Cl7-BZ#187	ND		ng/l	1.00	0.500
Cl8-BZ#195	ND		ng/l	1.00	0.500
Cl9-BZ#206	ND		ng/l	1.00	0.500
Cl10-BZ#209	ND		ng/l	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	81		30-150
DBOB	82		30-150
BZ 198	80		30-150

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01 Batch: WG1034933-2 WG1034933-3								
Naphthalene	75		73		50-120	3		30
Acenaphthylene	76		73		50-120	4		30
Acenaphthene	73		70		50-120	4		30
Fluorene	75		73		50-120	3		30
Phenanthrene	72		70		50-120	3		30
Anthracene	83		80		50-120	4		30
Fluoranthene	76		76		50-120	0		30
Pyrene	79		77		50-120	3		30
Benz(a)anthracene	83		81		50-120	2		30
Chrysene	86		84		50-120	2		30
Benzo(b)fluoranthene	81		81		50-120	0		30
Benzo(k)fluoranthene	89		84		50-120	6		30
Benzo(a)pyrene	86		85		50-120	1		30
Indeno(1,2,3-cd)Pyrene	82		80		50-120	2		30
Dibenz(a,h)anthracene	83		80		50-120	4		30
Benzo(ghi)perylene	87		84		50-120	4		30
Cl2-BZ#8	90		89		50-120	1		30
Cl3-BZ#18	87		85		50-120	2		30
Cl3-BZ#28	88		88		50-120	0		30
Cl4-BZ#44	92		92		50-120	0		30
Cl4-BZ#49	91		91		50-120	0		30
Cl4-BZ#52	87		88		50-120	1		30
Cl4-BZ#66	91		91		50-120	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01 Batch: WG1034933-2 WG1034933-3								
Cl5-BZ#87	89		90		50-120	1		30
Cl5-BZ#101	87		88		50-120	1		30
Cl5-BZ#105	91		91		50-120	0		30
Cl5-BZ#118	91		90		50-120	1		30
Cl6-BZ#128	89		89		50-120	0		30
Cl6-BZ#138	88		89		50-120	1		30
Cl6-BZ#153	90		90		50-120	0		30
Cl7-BZ#170	87		86		50-120	1		30
Cl7-BZ#180	86		86		50-120	0		30
Cl7-BZ#183	86		87		50-120	1		30
Cl7-BZ#184	86		87		50-120	1		30
Cl7-BZ#187	84		84		50-120	0		30
Cl8-BZ#195	86		86		50-120	0		30
Cl9-BZ#206	82		82		50-120	0		30
Cl10-BZ#209	89		89		50-120	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	68		66		30-150
Pyrene-d10	83		81		30-150
Benzo(b)fluoranthene-d12	84		82		30-150
DBOB	81		81		30-150
BZ 198	83		82		30-150

PESTICIDES

Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728961-01
 Client ID: NHH-EB-NISK-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 11:35
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 06:17

Matrix: Water
 Analytical Method: 1,8081B
 Analytical Date: 08/24/17 19:44
 Analyst: DP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	1	A
gamma-BHC	ND		ug/l	0.0005	0.0005	1	A
Heptachlor	ND		ug/l	0.0005	0.0005	1	A
Aldrin	ND		ug/l	0.0010	0.0010	1	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	1	B
Oxychlordane	ND		ug/l	0.0005	0.0005	1	B
trans-Chlordane	ND		ug/l	0.0005	0.0005	1	A
Endosulfan I	ND		ug/l	0.0005	0.0005	1	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	1	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	1	A
Dieldrin	ND		ug/l	0.0005	0.0005	1	A
Endrin	ND		ug/l	0.0005	0.0005	1	A
Endosulfan II	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	1	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	1	A
Methoxychlor	ND		ug/l	0.0051	0.0051	1	A
Toxaphene	ND		ug/l	0.0257	0.0257	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	64		30-150	A
BZ 198	174	Q	30-150	A
DBOB	57		30-150	B
BZ 198	72		30-150	B



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/24/17 18:07
Analyst: DP

Extraction Method: EPA 3510C
Extraction Date: 08/24/17 06:17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01 Batch: WG1034932-1						
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	A
gamma-BHC	ND		ug/l	0.0005	0.0005	A
Heptachlor	ND		ug/l	0.0005	0.0005	A
Aldrin	ND		ug/l	0.0010	0.0010	A
trans-Chlordane	ND		ug/l	0.0005	0.0005	A
Endosulfan I	ND		ug/l	0.0005	0.0005	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	A
Dieldrin	ND		ug/l	0.0005	0.0005	A
Endrin	ND		ug/l	0.0005	0.0005	A
Endosulfan II	ND		ug/l	0.0005	0.0005	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	A
Methoxychlor	ND		ug/l	0.0050	0.0050	A
Toxaphene	ND		ug/l	0.0250	0.0250	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	B
Oxychlordane	ND		ug/l	0.0005	0.0005	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	89		30-150	A
BZ 198	95		30-150	A
DBOB	80		30-150	B
BZ 198	100		30-150	B



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01 Batch: WG1034932-2 WG1034932-3									
Hexachlorobenzene	71		83		50-120	16		30	A
gamma-BHC	64		77		50-120	19		30	A
Heptachlor	73		87		50-120	17		30	A
Aldrin	75		91		50-120	20		30	A
trans-Chlordane	81		96		50-120	17		30	A
Endosulfan I	79		94		50-120	17		30	A
cis-Chlordane	78		93		50-120	17		30	A
trans-Nonachlor	79		93		50-120	17		30	A
4,4'-DDE	97		108		50-120	11		30	A
Dieldrin	92		107		50-120	15		30	A
Endrin	78		90		50-120	14		30	A
4,4'-DDD	92		104		50-120	12		30	A
cis-Nonachlor	81		93		50-120	14		30	A
4,4'-DDT	100		114		50-120	13		30	A
Methoxychlor	98		108		50-120	10		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	71		85		30-150	A
BZ 198	89		193	Q	30-150	A
DBOB	65		79		30-150	B
BZ 198	95		103		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01 Batch: WG1034932-2 WG1034932-3									
Heptachlor epoxide	79		95		50-120	18		30	B
Oxychlordane	73		87		50-120	18		30	B
Endosulfan II	91		101		50-120	10		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	71		85		30-150	A
BZ 198	89		193	Q	30-150	A
DBOB	65		79		30-150	B
BZ 198	95		103		30-150	B

METALS

Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728961-01

Date Collected: 08/17/17 11:35

Client ID: NHH-EB-NISK-081717

Date Received: 08/17/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Chromium, Total	0.00040	J	mg/l	0.00050	0.00017	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Mercury, Total	ND		mg/l	0.00005	0.00001	1	09/05/17 09:30	09/06/17 13:50	EPA 7474	1,7474	BV
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/31/17 10:18	09/01/17 11:56	EPA 3020A	1,6020A	BV



Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1037302-1										
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Chromium, Total	0.00032	J	mg/l	0.00050	0.00017	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV

Prep Information

Digestion Method: EPA 3020A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1037306-1										
Mercury, Total	ND		mg/l	0.00005	0.00001	1	09/05/17 09:30	09/06/17 13:38	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1037302-2								
Arsenic, Total	98		-		80-120	-		20
Cadmium, Total	102		-		80-120	-		20
Chromium, Total	100		-		80-120	-		20
Copper, Total	101		-		80-120	-		20
Lead, Total	102		-		80-120	-		20
Nickel, Total	101		-		80-120	-		20
Zinc, Total	98		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1037306-2 SRM Lot Number: HPHGAF								
Mercury, Total	97		-		80-120	-		20

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1037302-3 QC Sample: L1728961-01 Client ID: NHH-EB-NISK-081717												
Arsenic, Total	ND	0.12	0.1159	96		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.05095	100		-	-		75-125	-		20
Chromium, Total	0.00040J	0.2	0.199	100		-	-		75-125	-		20
Copper, Total	ND	0.25	0.248	99		-	-		75-125	-		20
Lead, Total	ND	0.51	0.502	98		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.4958	99		-	-		75-125	-		20
Zinc, Total	ND	0.5	0.479	96		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1037306-3 QC Sample: L1728962-02 Client ID: MS Sample												
Mercury, Total	ND	0.0025	0.00237	95		-	-		80-120	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1037302-4 QC Sample: L1728961-01 Client ID: NHH-EB-NISK-081717						
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00040J	0.00039J	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1037306-4 QC Sample: L1728962-02 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: USACE-NHH FNP**Project Number:** 60543021**Lab Number:** L1728961**Report Date:** 11/06/17**SAMPLE RESULTS****Lab ID:** L1728961-01**Client ID:** NHH-EB-NISK-081717**Sample Location:** NEW HAVEN, CT**Matrix:** Water**Date Collected:** 08/17/17 11:35**Date Received:** 08/17/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/18/17 00:01	08/18/17 00:24	77,7196A	ML



Project Name: USACE-NHH FNP

Lab Number: L1728961

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1033086-1										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/18/17 00:01	08/18/17 00:23	77,7196A	ML



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE-NHH FNP

Project Number: 60543021

Lab Number: L1728961

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
CT RCP General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1033086-2 WG1033086-3								
Chromium, Hexavalent	103		104		80-120	1		20

Project Name: USACE-NHH FNP
Project Number: 60543021

Serial_No:11061718:32
Lab Number: L1728961
Report Date: 11/06/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728961-01A	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		A2-PB-6020T(180),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-CU-6020T(180)
L1728961-01B	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728961-01C	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728961-01D	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728961-01E	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728961-01F	Plastic 250ml unpreserved	A	7	7	5.0	Y	Absent		CT-HEXCR-7196(1)

Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH FNP
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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE-NHH FNP
Project Number: 60543021

Lab Number: L1728961
Report Date: 11/06/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 77 Connecticut DEP Quality Assurance and Quality Control Requirements for SW-846 Methods. CTDEP Reasonable Confidence Protocols (RCPs). Version 1.0, July 2005.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	NA
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	L1728961-01- BZ198 column A = 174%	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

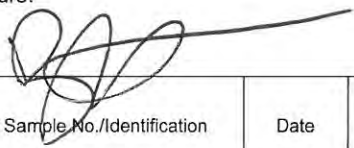


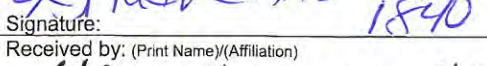
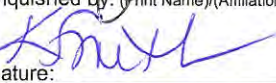
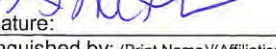
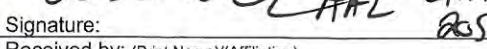
Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

21728961

Page 1 of 1

Client/Project Name: USACE - NHF FNP				Project Location: NEW HAVEN, CT				Analysis Requested				Container Type		Preservation																	
Project Number: 60543021				Field Logbook No.:								P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°																	
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM				Chain of Custody Tape Nos.:				Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				Lab I.D.		Remarks																	
Signature: 				Send Results/Report to: MARY DONOVAN KOZIK		TAT: STD						METALS PAHS/PCB PESTICIDES CR6																			
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered																							
NHH-ED-MISL-081717	8/17/17	1135		X		W	4°C-3	N/A	X	X	X	X																			
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY				Date: 8/17/17		Received by: (Print Name)/(Affiliation) 				Date: 8/17/17		Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOROUGH, MA																			
Signature: 				Time: 1840		Signature: 				Time: 1840		ATTN: 12 PORTA																			
Relinquished by: (Print Name)/(Affiliation) 				Date: 8/17/17		Received by: (Print Name)/(Affiliation) WILL DELAAL				Date: 8/17/17																					
Signature: 				Time: 2055		Signature: 				Time: 2055																					
Relinquished by: (Print Name)/(Affiliation)				Date:		Received by: (Print Name)/(Affiliation)				Date:		Sample Shipped Via:																			
Signature:				Time:		Signature:				Time:		Temp blank																			
												UPS FedEx <u>Courier</u> Other																			
												<u>Yes</u> No																			



ANALYTICAL REPORT

Lab Number:	L1728962
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	11/06/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1728962-01	NHH-EB-GRAB-081717	WATER	NEW HAVEN, CT	08/17/17 11:55	08/17/17
L1728962-02	NHH-EB-PUMP-081717	WATER	NEW HAVEN, CT	08/17/17 16:00	08/17/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

Case Narrative (continued)

Report Submission

This report replaces the report issued on September 8, 2017. The RIM QC Summary Forms are attached as an addendum.


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Pesticides

WG1034932-3 (LCSD): The surrogate recovery is outside the individual acceptance criteria for BZ198 (193%), but within the overall method allowances.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 11/06/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-01
 Client ID: NHH-EB-GRAB-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 11:55
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 05:00

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/28/17 22:32
 Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	18.2		ng/l	10.1	5.05	1
Acenaphthylene	ND		ng/l	10.1	5.05	1
Acenaphthene	ND		ng/l	10.1	5.05	1
Fluorene	ND		ng/l	10.1	5.05	1
Phenanthrene	20.7		ng/l	10.1	5.05	1
Anthracene	ND		ng/l	10.1	5.05	1
Fluoranthene	36.2		ng/l	10.1	5.05	1
Pyrene	30.4		ng/l	10.1	5.05	1
Benz(a)anthracene	15.4		ng/l	10.1	5.05	1
Chrysene	14.9		ng/l	10.1	5.05	1
Benzo(b)fluoranthene	12.1		ng/l	10.1	5.05	1
Benzo(k)fluoranthene	9.37	J	ng/l	10.1	5.05	1
Benzo(a)pyrene	11.2		ng/l	10.1	5.05	1
Indeno(1,2,3-cd)Pyrene	8.12	J	ng/l	10.1	5.05	1
Dibenz(a,h)anthracene	ND		ng/l	10.1	5.05	1
Benzo(ghi)perylene	7.81	J	ng/l	10.1	5.05	1
Cl2-BZ#8	ND		ng/l	1.01	0.505	1
Cl3-BZ#18	ND		ng/l	1.01	0.505	1
Cl3-BZ#28	ND		ng/l	1.01	0.505	1
Cl4-BZ#44	ND		ng/l	1.01	0.505	1
Cl4-BZ#49	ND		ng/l	1.01	0.505	1
Cl4-BZ#52	ND		ng/l	1.01	0.505	1
Cl4-BZ#66	ND		ng/l	1.01	0.505	1
Cl5-BZ#87	ND		ng/l	1.01	0.505	1
Cl5-BZ#101	ND		ng/l	1.01	0.505	1
Cl5-BZ#105	ND		ng/l	1.01	0.505	1
Cl5-BZ#118	ND		ng/l	1.01	0.505	1
Cl6-BZ#128	ND		ng/l	1.01	0.505	1
Cl6-BZ#138	ND		ng/l	1.01	0.505	1
Cl6-BZ#153	ND		ng/l	1.01	0.505	1



Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-01
 Client ID: NHH-EB-GRAB-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 11:55
 Date Received: 08/17/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ng/l	1.01	0.505	1
CI7-BZ#180	ND		ng/l	1.01	0.505	1
CI7-BZ#183	ND		ng/l	1.01	0.505	1
CI7-BZ#184	ND		ng/l	1.01	0.505	1
CI7-BZ#187	ND		ng/l	1.01	0.505	1
CI8-BZ#195	ND		ng/l	1.01	0.505	1
CI9-BZ#206	ND		ng/l	1.01	0.505	1
CI10-BZ#209	ND		ng/l	1.01	0.505	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	71		30-150
DBOB	66		30-150
BZ 198	54		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-02
 Client ID: NHH-EB-PUMP-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 16:00
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 05:00

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 08/28/17 23:04
 Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	21.2		ng/l	10.0	5.00	1
Acenaphthylene	ND		ng/l	10.0	5.00	1
Acenaphthene	ND		ng/l	10.0	5.00	1
Fluorene	ND		ng/l	10.0	5.00	1
Phenanthrene	ND		ng/l	10.0	5.00	1
Anthracene	ND		ng/l	10.0	5.00	1
Fluoranthene	ND		ng/l	10.0	5.00	1
Pyrene	ND		ng/l	10.0	5.00	1
Benz(a)anthracene	ND		ng/l	10.0	5.00	1
Chrysene	ND		ng/l	10.0	5.00	1
Benzo(b)fluoranthene	ND		ng/l	10.0	5.00	1
Benzo(k)fluoranthene	ND		ng/l	10.0	5.00	1
Benzo(a)pyrene	ND		ng/l	10.0	5.00	1
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.0	5.00	1
Dibenz(a,h)anthracene	ND		ng/l	10.0	5.00	1
Benzo(ghi)perylene	ND		ng/l	10.0	5.00	1
Cl2-BZ#8	ND		ng/l	1.00	0.500	1
Cl3-BZ#18	ND		ng/l	1.00	0.500	1
Cl3-BZ#28	ND		ng/l	1.00	0.500	1
Cl4-BZ#44	ND		ng/l	1.00	0.500	1
Cl4-BZ#49	ND		ng/l	1.00	0.500	1
Cl4-BZ#52	ND		ng/l	1.00	0.500	1
Cl4-BZ#66	ND		ng/l	1.00	0.500	1
Cl5-BZ#87	ND		ng/l	1.00	0.500	1
Cl5-BZ#101	ND		ng/l	1.00	0.500	1
Cl5-BZ#105	ND		ng/l	1.00	0.500	1
Cl5-BZ#118	ND		ng/l	1.00	0.500	1
Cl6-BZ#128	ND		ng/l	1.00	0.500	1
Cl6-BZ#138	ND		ng/l	1.00	0.500	1
Cl6-BZ#153	ND		ng/l	1.00	0.500	1



Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-02
 Client ID: NHH-EB-PUMP-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 16:00
 Date Received: 08/17/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ng/l	1.00	0.500	1
CI7-BZ#180	ND		ng/l	1.00	0.500	1
CI7-BZ#183	ND		ng/l	1.00	0.500	1
CI7-BZ#184	ND		ng/l	1.00	0.500	1
CI7-BZ#187	ND		ng/l	1.00	0.500	1
CI8-BZ#195	ND		ng/l	1.00	0.500	1
CI9-BZ#206	ND		ng/l	1.00	0.500	1
CI10-BZ#209	ND		ng/l	1.00	0.500	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	69		30-150
Pyrene-d10	83		30-150
Benzo(b)fluoranthene-d12	83		30-150
DBOB	73		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/28/17 18:56

Extraction Date: 08/24/17 05:00

Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1034933-1					
Naphthalene	ND		ng/l	10.0	5.00
Acenaphthylene	ND		ng/l	10.0	5.00
Acenaphthene	ND		ng/l	10.0	5.00
Fluorene	ND		ng/l	10.0	5.00
Phenanthrene	ND		ng/l	10.0	5.00
Anthracene	ND		ng/l	10.0	5.00
Fluoranthene	ND		ng/l	10.0	5.00
Pyrene	ND		ng/l	10.0	5.00
Benz(a)anthracene	ND		ng/l	10.0	5.00
Chrysene	ND		ng/l	10.0	5.00
Benzo(b)fluoranthene	ND		ng/l	10.0	5.00
Benzo(k)fluoranthene	ND		ng/l	10.0	5.00
Benzo(a)pyrene	ND		ng/l	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.0	5.00
Dibenz(a,h)anthracene	ND		ng/l	10.0	5.00
Benzo(ghi)perylene	ND		ng/l	10.0	5.00
Cl2-BZ#8	ND		ng/l	1.00	0.500
Cl3-BZ#18	ND		ng/l	1.00	0.500
Cl3-BZ#28	ND		ng/l	1.00	0.500
Cl4-BZ#44	ND		ng/l	1.00	0.500
Cl4-BZ#49	ND		ng/l	1.00	0.500
Cl4-BZ#52	ND		ng/l	1.00	0.500
Cl4-BZ#66	ND		ng/l	1.00	0.500
Cl5-BZ#87	ND		ng/l	1.00	0.500
Cl5-BZ#101	ND		ng/l	1.00	0.500
Cl5-BZ#105	ND		ng/l	1.00	0.500
Cl5-BZ#118	ND		ng/l	1.00	0.500
Cl6-BZ#128	ND		ng/l	1.00	0.500
Cl6-BZ#138	ND		ng/l	1.00	0.500



Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3510C

Analytical Date: 08/28/17 18:56

Extraction Date: 08/24/17 05:00

Analyst: JT

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1034933-1					
Cl6-BZ#153	ND		ng/l	1.00	0.500
Cl7-BZ#170	ND		ng/l	1.00	0.500
Cl7-BZ#180	ND		ng/l	1.00	0.500
Cl7-BZ#183	ND		ng/l	1.00	0.500
Cl7-BZ#184	ND		ng/l	1.00	0.500
Cl7-BZ#187	ND		ng/l	1.00	0.500
Cl8-BZ#195	ND		ng/l	1.00	0.500
Cl9-BZ#206	ND		ng/l	1.00	0.500
Cl10-BZ#209	ND		ng/l	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	81		30-150
DBOB	82		30-150
BZ 198	80		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1034933-2 WG1034933-3								
Naphthalene	75		73		50-120	3		30
Acenaphthylene	76		73		50-120	4		30
Acenaphthene	73		70		50-120	4		30
Fluorene	75		73		50-120	3		30
Phenanthrene	72		70		50-120	3		30
Anthracene	83		80		50-120	4		30
Fluoranthene	76		76		50-120	0		30
Pyrene	79		77		50-120	3		30
Benz(a)anthracene	83		81		50-120	2		30
Chrysene	86		84		50-120	2		30
Benzo(b)fluoranthene	81		81		50-120	0		30
Benzo(k)fluoranthene	89		84		50-120	6		30
Benzo(a)pyrene	86		85		50-120	1		30
Indeno(1,2,3-cd)Pyrene	82		80		50-120	2		30
Dibenz(a,h)anthracene	83		80		50-120	4		30
Benzo(ghi)perylene	87		84		50-120	4		30
Cl2-BZ#8	90		89		50-120	1		30
Cl3-BZ#18	87		85		50-120	2		30
Cl3-BZ#28	88		88		50-120	0		30
Cl4-BZ#44	92		92		50-120	0		30
Cl4-BZ#49	91		91		50-120	0		30
Cl4-BZ#52	87		88		50-120	1		30
Cl4-BZ#66	91		91		50-120	0		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1034933-2 WG1034933-3								
Cl5-BZ#87	89		90		50-120	1		30
Cl5-BZ#101	87		88		50-120	1		30
Cl5-BZ#105	91		91		50-120	0		30
Cl5-BZ#118	91		90		50-120	1		30
Cl6-BZ#128	89		89		50-120	0		30
Cl6-BZ#138	88		89		50-120	1		30
Cl6-BZ#153	90		90		50-120	0		30
Cl7-BZ#170	87		86		50-120	1		30
Cl7-BZ#180	86		86		50-120	0		30
Cl7-BZ#183	86		87		50-120	1		30
Cl7-BZ#184	86		87		50-120	1		30
Cl7-BZ#187	84		84		50-120	0		30
Cl8-BZ#195	86		86		50-120	0		30
Cl9-BZ#206	82		82		50-120	0		30
Cl10-BZ#209	89		89		50-120	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	68		66		30-150
Pyrene-d10	83		81		30-150
Benzo(b)fluoranthene-d12	84		82		30-150
DBOB	81		81		30-150
BZ 198	83		82		30-150

PESTICIDES

Project Name: USACE/NHH FNP**Lab Number:** L1728962**Project Number:** 60543021**Report Date:** 11/06/17**SAMPLE RESULTS**

Lab ID: L1728962-01
 Client ID: NHH-EB-GRAB-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 11:55
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 06:17

Matrix: Water
 Analytical Method: 1,8081B
 Analytical Date: 08/24/17 20:17
 Analyst: DP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	1	A
gamma-BHC	ND		ug/l	0.0005	0.0005	1	A
Heptachlor	ND		ug/l	0.0005	0.0005	1	A
Aldrin	ND		ug/l	0.0010	0.0010	1	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	1	B
Oxychlordane	ND		ug/l	0.0005	0.0005	1	B
trans-Chlordane	ND		ug/l	0.0005	0.0005	1	A
Endosulfan I	ND		ug/l	0.0005	0.0005	1	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	1	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	1	A
Dieldrin	ND		ug/l	0.0005	0.0005	1	A
Endrin	ND		ug/l	0.0005	0.0005	1	A
Endosulfan II	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	1	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	1	A
Methoxychlor	ND		ug/l	0.0050	0.0050	1	A
Toxaphene	ND		ug/l	0.0252	0.0252	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	73		30-150	A
BZ 198	67		30-150	A
DBOB	65		30-150	B
BZ 198	72		30-150	B



Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-02
 Client ID: NHH-EB-PUMP-081717
 Sample Location: NEW HAVEN, CT

Date Collected: 08/17/17 16:00
 Date Received: 08/17/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 08/24/17 06:17

Matrix: Water
 Analytical Method: 1,8081B
 Analytical Date: 08/24/17 20:49
 Analyst: DP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	1	A
gamma-BHC	ND		ug/l	0.0005	0.0005	1	A
Heptachlor	ND		ug/l	0.0005	0.0005	1	A
Aldrin	ND		ug/l	0.0010	0.0010	1	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	1	B
Oxychlordane	ND		ug/l	0.0005	0.0005	1	B
trans-Chlordane	ND		ug/l	0.0005	0.0005	1	A
Endosulfan I	ND		ug/l	0.0005	0.0005	1	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	1	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	1	A
Dieldrin	ND		ug/l	0.0005	0.0005	1	A
Endrin	ND		ug/l	0.0005	0.0005	1	A
Endosulfan II	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	1	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	1	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	1	A
Methoxychlor	ND		ug/l	0.0050	0.0050	1	A
Toxaphene	ND		ug/l	0.0250	0.0250	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	71		30-150	A
BZ 198	70		30-150	A
DBOB	64		30-150	B
BZ 198	73		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/24/17 18:07
Analyst: DP

Extraction Method: EPA 3510C
Extraction Date: 08/24/17 06:17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-02 Batch: WG1034932-1						
Hexachlorobenzene	ND		ug/l	0.0020	0.0020	A
gamma-BHC	ND		ug/l	0.0005	0.0005	A
Heptachlor	ND		ug/l	0.0005	0.0005	A
Aldrin	ND		ug/l	0.0010	0.0010	A
trans-Chlordane	ND		ug/l	0.0005	0.0005	A
Endosulfan I	ND		ug/l	0.0005	0.0005	A
cis-Chlordane	ND		ug/l	0.0005	0.0005	A
trans-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDE	ND		ug/l	0.0005	0.0005	A
Dieldrin	ND		ug/l	0.0005	0.0005	A
Endrin	ND		ug/l	0.0005	0.0005	A
Endosulfan II	ND		ug/l	0.0005	0.0005	A
4,4'-DDD	ND		ug/l	0.0005	0.0005	A
cis-Nonachlor	ND		ug/l	0.0005	0.0005	A
4,4'-DDT	ND		ug/l	0.0005	0.0005	A
Methoxychlor	ND		ug/l	0.0050	0.0050	A
Toxaphene	ND		ug/l	0.0250	0.0250	A
Heptachlor epoxide	ND		ug/l	0.0005	0.0005	B
Oxychlordane	ND		ug/l	0.0005	0.0005	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	89		30-150	A
BZ 198	95		30-150	A
DBOB	80		30-150	B
BZ 198	100		30-150	B



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 Batch: WG1034932-2 WG1034932-3									
Hexachlorobenzene	71		83		50-120	16		30	A
gamma-BHC	64		77		50-120	19		30	A
Heptachlor	73		87		50-120	17		30	A
Aldrin	75		91		50-120	20		30	A
trans-Chlordane	81		96		50-120	17		30	A
Endosulfan I	79		94		50-120	17		30	A
cis-Chlordane	78		93		50-120	17		30	A
trans-Nonachlor	79		93		50-120	17		30	A
4,4'-DDE	97		108		50-120	11		30	A
Dieldrin	92		107		50-120	15		30	A
Endrin	78		90		50-120	14		30	A
4,4'-DDD	92		104		50-120	12		30	A
cis-Nonachlor	81		93		50-120	14		30	A
4,4'-DDT	100		114		50-120	13		30	A
Methoxychlor	98		108		50-120	10		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	71		85		30-150	A
BZ 198	89		193	Q	30-150	A
DBOB	65		79		30-150	B
BZ 198	95		103		30-150	B

Lab Control Sample Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1728962**Report Date:** 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-02 Batch: WG1034932-2 WG1034932-3									
Heptachlor epoxide	79		95		50-120	18		30	B
Oxychlordane	73		87		50-120	18		30	B
Endosulfan II	91		101		50-120	10		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	71		85		30-150	A
BZ 198	89		193	Q	30-150	A
DBOB	65		79		30-150	B
BZ 198	95		103		30-150	B

METALS

Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-01
 Client ID: NHH-EB-GRAB-081717
 Sample Location: NEW HAVEN, CT
 Matrix: Water

Date Collected: 08/17/17 11:55
 Date Received: 08/17/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Chromium, Total	0.00249		mg/l	0.00050	0.00017	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Copper, Total	0.00076	J	mg/l	0.00100	0.00038	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Mercury, Total	ND		mg/l	0.00005	0.00001	1	09/05/17 09:30	09/06/17 13:53	EPA 7474	1,7474	BV
Nickel, Total	0.00389		mg/l	0.00200	0.00055	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV
Zinc, Total	0.00891	J	mg/l	0.0100	0.00341	1	08/31/17 10:18	09/01/17 12:37	EPA 3020A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

SAMPLE RESULTS

Lab ID: L1728962-02

Date Collected: 08/17/17 16:00

Client ID: NHH-EB-PUMP-081717

Date Received: 08/17/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Chromium, Total	0.00035	J	mg/l	0.00050	0.00017	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Mercury, Total	ND		mg/l	0.00005	0.00001	1	09/05/17 09:30	09/06/17 13:43	EPA 7474	1,7474	BV
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/31/17 10:18	09/01/17 13:08	EPA 3020A	1,6020A	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1037302-1										
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Chromium, Total	0.00032	J	mg/l	0.00050	0.00017	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV
Zinc, Total	ND		mg/l	0.0100	0.00341	1	08/31/17 10:18	09/01/17 11:23	1,6020A	BV

Prep Information

Digestion Method: EPA 3020A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1037306-1										
Mercury, Total	ND		mg/l	0.00005	0.00001	1	09/05/17 09:30	09/06/17 13:38	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1037302-2								
Arsenic, Total	98		-		80-120	-		20
Cadmium, Total	102		-		80-120	-		20
Chromium, Total	100		-		80-120	-		20
Copper, Total	101		-		80-120	-		20
Lead, Total	102		-		80-120	-		20
Nickel, Total	101		-		80-120	-		20
Zinc, Total	98		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1037306-2 SRM Lot Number: HPHGAF								
Mercury, Total	97		-		80-120	-		20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Lab Number: L1728962

Project Number: 60543021

Report Date: 11/06/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02			QC Batch ID: WG1037302-3			QC Sample: L1728961-01			Client ID: MS Sample			
Arsenic, Total	ND	0.12	0.1159	96		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.05095	100		-	-		75-125	-		20
Chromium, Total	0.00040J	0.2	0.199	100		-	-		75-125	-		20
Copper, Total	ND	0.25	0.248	99		-	-		75-125	-		20
Lead, Total	ND	0.51	0.502	98		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.4958	99		-	-		75-125	-		20
Zinc, Total	ND	0.5	0.479	96		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02			QC Batch ID: WG1037306-3			QC Sample: L1728962-02			Client ID: NHH-EB-PUMP-081717			
Mercury, Total	ND	0.0025	0.00237	95		-	-		80-120	-		20

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1037302-4 QC Sample: L1728961-01 Client ID: DUP Sample						
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00040J	0.00039J	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1037306-4 QC Sample: L1728962-02 Client ID: NHH-EB-PUMP-081717						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1728962**Report Date:** 11/06/17**SAMPLE RESULTS**

Lab ID: L1728962-01
Client ID: NHH-EB-GRAB-081717
Sample Location: NEW HAVEN, CT
Matrix: Water

Date Collected: 08/17/17 11:55
Date Received: 08/17/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/18/17 00:01	08/18/17 00:26	77,7196A	ML



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1728962**Report Date:** 11/06/17**SAMPLE RESULTS**

Lab ID: L1728962-02
Client ID: NHH-EB-PUMP-081717
Sample Location: NEW HAVEN, CT
Matrix: Water

Date Collected: 08/17/17 16:00
Date Received: 08/17/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/18/17 00:01	08/18/17 00:27	77,7196A	ML



Project Name: USACE/NHH FNP**Lab Number:** L1728962**Project Number:** 60543021**Report Date:** 11/06/17**Method Blank Analysis**
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
CT RCP General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1033086-1										
Chromium, Hexavalent	ND		mg/l	0.01	0.003	1	08/18/17 00:01	08/18/17 00:23	77,7196A	ML



Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1728962

Report Date: 11/06/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
CT RCP General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1033086-2 WG1033086-3								
Chromium, Hexavalent	103		104		80-120	1		20

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11061718:34
Lab Number: L1728962
Report Date: 11/06/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
 B Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1728962-01A	Plastic 250ml HNO3 preserved	B	<2	<2	4.1	Y	Absent		A2-PB-6020T(180),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-CU-6020T(180)
L1728962-01B	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-01C	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-01D	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-01E	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-01F	Plastic 250ml unpreserved	B	7	7	4.1	Y	Absent		CT-HEXCR-7196(1)
L1728962-02A	Plastic 250ml HNO3 preserved	B	<2	<2	4.1	Y	Absent		A2-PB-6020T(180),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-CU-6020T(180)
L1728962-02B	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-02C	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-02D	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-02E	Amber 1000ml unpreserved	B	7	7	4.1	Y	Absent		A2-RIM-PEST-8081(7),A2-RIM-PAH/PCBCONG(7)
L1728962-02F	Plastic 250ml unpreserved	B	7	7	4.1	Y	Absent		CT-HEXCR-7196(1)

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1728962
Report Date: 11/06/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 77 Connecticut DEP Quality Assurance and Quality Control Requirements for SW-846 Methods. CTDEP Reasonable Confidence Protocols (RCPs). Version 1.0, July 2005.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:**Westborough Facility****EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation**Westborough Facility:****Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	N/A
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	N/A
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	N/A
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative (LCSD)



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	N/A		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	N/A		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	N/A		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:


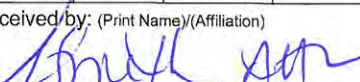


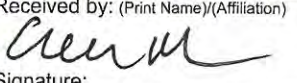
Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

AECOM

CHAIN OF CUSTODY RECORD

4728962

Page 1 of 1

Client/Project Name: USACE - MHH FNP			Project Location: NEW HAVEN, CT			Analysis Requested				Container Type		Preservation												
Project Number: 605 43021			Field Logbook No.:							P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°												
Sampler (Print Name)/(Affiliation): RYAN MCCARTHY / AECOM			Chain of Custody Tape Nos.:							Matrix Codes:		DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product										
Signature: 			Send Results/Report to: MARY O'NEILL KOSIK			TAT: STD			<div style="display: flex; flex-direction: column; align-items: center;"> <div>METALS</div> <div>PAHs/PCBS</div> <div>PESTICIDES</div> <div>CR6</div> </div>		Lab I.D.		Remarks											
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered																
UHH-EB-GRAB-081717	8/17/17	1155		X							X	X	X	X										
UHH-EB-PUMP-081717	8/17/17	1600		X					X	X	X	X												
[Table content is crossed out with a large X]																								
Relinquished by: (Print Name)/(Affiliation) RYAN MCCARTHY			Date: 8/17/17			Received by: (Print Name)/(Affiliation) 			Date: 8/17/17			Analytical Laboratory (Destination): ALPHA ANALYTICAL 8 WALKUP DRIVE WEST BOROUGH, MA												
Signature: 			Time: 1840			Signature:			Time: 1840															
Relinquished by: (Print Name)/(Affiliation) 			Date: 8/17/17			Received by: (Print Name)/(Affiliation) 			Date: 8/17/17															
Signature:			Time: 2053			Signature:			Time: 2053															
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:															
Signature:			Time:			Signature:			Time:															
Sample Shipped Via:						Temp blank																		
UPS FedEx <u>Courier</u> Other						<u>Yes</u> No																		

Elutriate Chemistry Data

**CHEMICAL ANALYSIS
OF A MARINE SEDIMENT - ELUTRIATE SOLUTION:**

**New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven Harbor, New Haven, Connecticut**

**New England District Corps of Engineers
USACE Contract No. W912WJ-17-D-003**

Prepared For:

AECOM
250 Apollo Drive
Chelmsford, Massachusetts

Prepared By:

EnviroSystems, Incorporated
One Lafayette Road
Hampton, New Hampshire 03842

EnviroSystems, Inc. Master Reference 29516

Study Specific Reference 29522
October 2017

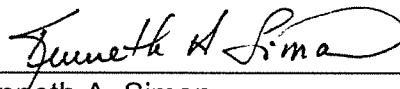
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LABORATORY STANDARDS STATEMENT

This study was performed by EnviroSystems, Incorporated at its facility in Hampton, New Hampshire. EnviroSystems' laboratory is accredited by the State of New Hampshire under the National Environmental Laboratory Accreditation (NELAC) program. Additionally, ESI is accredited under the Department of Defense (DoD) ELAP program, ISO/IEC 17025:2005, Certificate Number L2340. All testing conducted by EnviroSystems as part of this program was compliant with NELAC guidelines and standards. Additionally, this study was conducted in accordance with guidelines presented in the 2004 version of the New England District's Regional Implementation Manual (RIM) for Evaluation of Dredged Material Proposed for Disposal In New England Waters. Any deviations from specific elements of the RIM are detailed in the Protocol Deviation Section of this Report.

For EnviroSystems, Inc.


Kenneth A. Simon
Technical Director

February 25, 2016
Date

CHEMICAL ANALYSIS OF A MARINE SEDIMENT - ELUTRIATE SOLUTION:

New Haven Harbor Federal Navigation Project Tier III Sediment Evaluation New Haven Harbor, New Haven Connecticut

1.0 SAMPLE COLLECTION, PRESERVATION AND STORAGE

Sediment samples for chemical and physical analysis were provided by AECOM from locations specified within the project work plan. Samples were received under chain of custody in sample containers appropriate for the specified analysis. Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Samples were placed in a secure sample holding location and stored at a temperature of $4\pm2^{\circ}\text{C}$ until analysis.

2.0 ANALYSIS

Sample analysis was carried out following methods and protocol specified in the project Sample Analysis Plan by EnviroSystems, Inc. at its Hampton, NH facility. Review of the data report document showed that all sample holding times were met, unless otherwise qualified, that the analytical methods used in the analysis were appropriate for the parameter and sample matrix and met New England District Regional Implementation Manual requirements. Review of supporting quality assurance data documented that, except where qualified, all data collected meet all of the requirements of NELAC, for all NELAC accredited parameters.

3.0 RESULTS

The analysis of elutriate samples were performed following analytical methods as recommended in Table 5 of the New England District RIM document with appropriate updates related to current methods. Trace metals were evaluated using EPA Method 200.9, Inductively Coupled Plasma - Mass Spectrometry (ICP-MS), mercury was evaluated using EPA Method 245.7, Cold Vapor Atomic Fluorescence Spectrometry. Hexavalent Chromium was analyzed using SM 3500 Cr-D. Pentachlorophenol was analyzed by EPA Method 8270C. PCB Congeners were analyzed by EPA Method 8270C - SIM. Pesticides were analyzed by EPA Method 8081B. In cases where dilution of the sample extract was required the final reporting limit remained above the RIM document specified limits and did not result in artificial "Non Detects."

A review of QC data documented one incidence where the %RPD in a matrix spike duplicate was above the limit. There were four incidences of low surrogate recoveries.

A full copy of the analytical report is included in the following data appendix

Project: New Haven

Sample ID:	Composite 1 Elutriate Blank - Rep 1	Composite 1 Elutriate Blank - Rep 2	Composite 1 Elutriate Blank - Rep 3
Lab ID:	29522-001	29522-002	29522-003
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0016		0.0015		0.0017	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0010		0.0010		0.0009	
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.0044		0.0044		0.0044	
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0075		0.0109		0.0072	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 1 Elutriate - Rep 1	Composite 1 Elutriate - Rep 2	Composite 1 Elutriate - Rep 3
Lab ID:	29522-019	29522-020	29522-021
Date Sampled:	08/22/17 1425	08/22/17 1425	08/22/17 1425
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0194		0.0195		0.0192	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0048		0.0046		0.0022	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 2 Elutriate - Rep 1	Composite 2 Elutriate - Rep 2	Composite 2 Elutriate - Rep 3
Lab ID:	29522-055	29522-056	29522-057
Date Sampled:	08/22/17 1055	08/22/17 1055	08/22/17 1055
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0304		0.0300		0.0308	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0014		0.0015		0.0013	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0095		0.0083		0.0134	

U = Below quantitation limit

ESI

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Project: New Haven

Sample ID:	Composite 3 Elutriate Blank - Rep 1	Composite 3 Elutriate Blank - Rep 2	Composite 3 Elutriate Blank - Rep 3
Lab ID:	29522-073	29522-074	29522-075
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0016		0.0017		0.0016	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0009		0.0009		0.0009	
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.0022		0.0021		0.0021	
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0107		0.0074		0.0066	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 3 Elutriate - Rep 1	Composite 3 Elutriate - Rep 2	Composite 3 Elutriate - Rep 3
Lab ID:	29522-091	29522-092	29522-093
Date Sampled:	08/22/17 1310	08/22/17 1310	08/22/17 1310
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0197		0.0195		0.0202	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0040		0.0060		0.0051	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
 SW 846 6020/EPA 200.8 modified
 EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 4 Elutriate - Rep 1	Composite 4 Elutriate - Rep 2	Composite 4 Elutriate - Rep 3
Lab ID:	29522-127	29522-128	29522-129
Date Sampled:	08/22/17 1212	08/22/17 1212	08/22/17 1212
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0431		0.0427		0.0418	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0017		0.0018		0.0016	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0156		0.0077		0.0039	

U = Below quantitation limit

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Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 5 Elutriate - Rep 1	Composite 5 Elutriate - Rep 2	Composite 5 Elutriate - Rep 3
Lab ID:	29522-163	29522-164	29522-165
Date Sampled:	08/23/17 1020	08/23/17 1020	08/23/17 1020
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0440		0.0440		0.0443	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0014		0.0014		0.0014	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0061		0.0049		0.0047	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	CLDS Ref Site Blank - Rep 1	CLDS Ref Site Blank - Rep 2	CLDS Ref Site Blank - Rep 3
Lab ID:	29522-181	29522-182	29522-183
Date Sampled:	08/25/17 0930	08/25/17 0930	08/25/17 0930
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0014		0.0014		0.0014	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0008		0.0009		0.0008	
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0062		0.0042		0.0028	

U = Below quantitation limit

ESI

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Inorganic Analytes in Elutriates
 SW 846 6020/EPA 200.8 modified
 EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 6 Elutriate - Rep 1	Composite 6 Elutriate - Rep 2	Composite 6 Elutriate - Rep 3
Lab ID:	29522-199	29522-200	29522-201
Date Sampled:	08/23/17 1100	08/23/17 1100	08/23/17 1100
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0256		0.0252		0.0270	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0016		0.0015		0.0015	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.001	U	0.001	U	0.001	U
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0030		0.0100		0.0061	

U = Below quantitation limit

ESI

Inorganic Analytes in Elutriates
 SW 846 6020/EPA 200.8 modified
 EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 7 Elutriate Blank - Rep 1	Composite 7 Elutriate Blank - Rep 2	Composite 7 Elutriate Blank - Rep 3
Lab ID:	29522-217	29522-218	29522-219
Date Sampled:	08/23/17 0840	08/23/17 0840	08/23/17 0840
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0015		0.0015		0.0015	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.001	U	0.001	U	0.001	U
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0011		0.0011		0.0011	
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.0010		0.0010		0.0010	
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0030		0.0034		0.0069	

U = Below quantitation limit

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Inorganic Analytes in Elutriates
 SW 846 6020/EPA 200.8 modified
 EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 7 Elutriate - Rep 1	Composite 7 Elutriate - Rep 2	Composite 7 Elutriate - Rep 3
Lab ID:	29522-235	29522-236	29522-237
Date Sampled:	08/23/17 0920	08/23/17 0920	08/23/17 0920
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0126		0.0126		0.0124	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0012		0.0013		0.0014	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.0015		0.0017		0.0017	
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0096		0.0062		0.0069	

U = Below quantitation limit

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Inorganic Analytes in Elutriates
SW 846 6020/EPA 200.8 modified
EPA 245.7 and SM 3500-Cr D

Project: New Haven

Sample ID:	Composite 8 Elutriate - Rep 1	Composite 8 Elutriate - Rep 2	Composite 8 Elutriate - Rep 3
Lab ID:	29522-271	29522-272	29522-273
Date Sampled:	08/23/17 1223	08/23/17 1223	08/23/17 1223
Matrix:	Water	Water	Water

Analyte	Units	Result	Qual	Result	Qual	Result	Qual
Arsenic, total	mg/L	0.0166		0.0164		0.0161	
Cadmium, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Chromium, total	mg/L	0.0012		0.0011		0.0011	
Chromium, hexavalent	mg/L	0.005	U	0.005	U	0.005	U
Copper, total	mg/L	0.0005	U	0.0005	U	0.0005	U
Lead, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Mercury, total	ug/L	0.01	U	0.01	U	0.01	U
Nickel, total	mg/L	0.0014		0.0012		0.0012	
Selenium, total	mg/L	0.002	U	0.002	U	0.002	U
Silver, total	mg/L	0.0002	U	0.0002	U	0.0002	U
Zinc, total	mg/L	0.0125		0.0108		0.0045	

U = Below quantitation limit

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Project: New Haven
Composite 1 Elutriate Blank

Lab Number:	29522-010	29522-011	29522-012
Sample Designation:	Composite 1 Elutriate Blank - Rep 1	Composite 1 Elutriate Blank - Rep 2	Composite 1 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/07/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,4',5,5',6-octachlorobiphenyl	104	102	115	30-150

J = Value below reporting limit but above detection limit.

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Project: New Haven
Composite 1

Lab Number:	29522-028	29522-029	29522-030
Sample Designation:	Composite 1 Elutriate - Rep 1	Composite 1 Elutriate - Rep 2	Composite 1 Elutriate - Rep 3
Date Sampled:	08/22/17 1425	08/22/17 1425	08/22/17 1425
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/08/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	128	112	112	30-150

ESI

Project: New Haven
Composite 2

Lab Number:	29522-064	29522-065	29522-066
Sample Designation:	Composite 2 Elutriate - Rep 1	Composite 2 Elutriate - Rep 2	Composite 2 Elutriate - Rep 3
Date Sampled:	08/22/17 1055	08/22/17 1055	08/22/17 1055
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/07/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	910
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	105	104	102	30-150

ESI

Project: New Haven
Composite 3 Elutriate Blank

Lab Number:	29522-082	29522-083	29522-084
Sample Designation:	Composite 3 Elutriate Blank - Rep 1	Composite 3 Elutriate Blank - Rep 2	Composite 3 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/07/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	920	940	930
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
Surrogate Standard		Recovery (%)		Recovery (%)		Recovery (%)	Limit (%)
198	2,2',3,3',4,5,5',6-octachlorobiphenyl	106		112		126	30-150

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Project: New Haven
Composite 3

Lab Number:	29522-100	29522-101	29522-102
Sample Designation:	Composite 3 Elutriate - Rep 1	Composite 3 Elutriate - Rep 2	Composite 3 Elutriate - Rep 3
Date Sampled:	08/22/17 1310	08/22/17 1310	08/22/17 1310
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/06/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	116	100	109	30-150

ESI

Project: New Haven
Composite 4

Lab Number:	29522-136	29522-137	29522-138
Sample Designation:	Composite 4 Elutriate - Rep 1	Composite 4 Elutriate - Rep 2	Composite 4 Elutriate - Rep 3
Date Sampled:	08/22/17 1212	08/22/17 1212	08/22/17 1212
Date Extracted:	08/24/17 1500	08/24/17 1500	08/24/17 1500
Date Analyzed:	09/08/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.001	J
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011		0.0009	J
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0008	J	0.0011	
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0013		0.0009	J
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0014		0.0012	
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.001	J	0.0009	J
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0008	J	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	109	97	108	30-150

J = Value below reporting limit but above detection limit.

ESI

Project: New Haven
Composite 5

Lab Number:	29522-172	29522-173	29522-174
Sample Designation:	Composite 5 Elutriate - Rep 1	Composite 5 Elutriate - Rep 2	Composite 5 Elutriate - Rep 3
Date Sampled:	08/23/17 1020	08/23/17 1020	08/23/17 1020
Date Extracted:	08/24/17 1500	08/24/17 1500	08/25/17 1200
Date Analyzed:	09/07/17	09/07/17	10/06/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	920
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0008	J	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0008	J	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0014		0.0012		0.0016	
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0013		0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0009	J	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0008	J	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	101	105	96	30-150

J = Value below reporting limit but above detection limit.

ESI

Project: New Haven
CLDS Ref Site Blank

Lab Number:	29522-190	29522-191	29522-192
Sample Designation:	CLDS Ref Site Blank - Rep 1	CLDS Ref Site Blank - Rep 2	CLDS Ref Site Blank - Rep 3
Date Sampled:	08/25/17 0930	08/25/17 0930	08/25/17 0930
Date Extracted:	08/25/17 1200	08/25/17 1200	08/25/17 1200
Date Analyzed:	09/07/17	09/07/17	09/07/17
Matrix:	Water	Water	Water
Sample Amount (mL):	960	950	960
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.001	U	0.0011	U	0.001	U
18	2,2',5-trichlorobiphenyl	0.001	U	0.0011	U	0.001	U
28	2,4,4'-trichlorobiphenyl	0.001	U	0.0011	U	0.001	U
44	2,2',3,5'-tetrachlorobiphenyl	0.001	U	0.0011	U	0.001	U
49	2,2',4,5'-tetrachlorobiphenyl	0.001	U	0.0011	U	0.001	U
52	2,2',5,5'-tetrachlorobiphenyl	0.001	U	0.0011	U	0.001	U
66	2,3',4,4'-tetrachlorobiphenyl	0.001	U	0.0011	U	0.001	U
77	3,3',4,4'-tetrachlorobiphenyl	0.001	U	0.0011	U	0.001	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.001	U	0.0011	U	0.001	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.001	U	0.0011	U	0.001	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.001	U	0.0011	U	0.001	U
118	2,3',4,4',5-pentachlorobiphenyl	0.001	U	0.0011	U	0.001	U
126	3,3',4,4',5-pentachlorobiphenyl	0.001	U	0.0011	U	0.001	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.001	U	0.0011	U	0.001	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.001	U	0.0011	U	0.001	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.001	U	0.0011	U	0.001	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.001	U	0.0011	U	0.001	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.001	U	0.0011	U	0.001	U
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.001	U	0.0011	U	0.001	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.001	U	0.0011	U	0.001	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0019	0	0.0011	U	0.001	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.001	U	0.0011	U	0.001	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.001	U	0.0011	U	0.001	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.001	U	0.0011	U	0.001	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	113	124	101	30-150

ESI

Project: New Haven
Composite 6

Lab Number:	29522-208	29522-209	29522-210
Sample Designation:	Composite 6 Elutriate - Rep 1	Composite 6 Elutriate - Rep 2	Composite 6 Elutriate - Rep 3
Date Sampled:	08/23/17 1100	08/23/17 1100	08/23/17 1100
Date Extracted:	08/25/17 1200	08/25/17 1200	08/25/17 1200
Date Analyzed:	09/08/17	09/08/17	09/08/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	930
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0026	
18	2,2',5-trichlorobiphenyl	0.0056		0.0069		0.0087	
28	2,4,4'-trichlorobiphenyl	0.017		0.013		0.013	
44	2,2',3,5'-tetrachlorobiphenyl	0.011		0.018		0.013	
49	2,2',4,5'-tetrachlorobiphenyl	0.016		0.017		0.015	
52	2,2',5,5'-tetrachlorobiphenyl	0.02		0.026		0.026	
66	2,3',4,4'-tetrachlorobiphenyl	0.013		0.016		0.016	
77	3,3',4,4'-tetrachlorobiphenyl	0.0023		0.0011	U	0.0009	J
87	2,2',3,4,5'-pentachlorobiphenyl	0.0072		0.0099		0.0092	
101	2,2',4,5,5'-pentachlorobiphenyl	0.024		0.03		0.029	
105	2,3,3',4,4'-pentachlorobiphenyl	0.0051		0.0072		0.0077	
118	2,3',4,4',5-pentachlorobiphenyl	0.015		0.014		0.017	
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0053		0.0039		0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.021		0.023		0.024	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.021		0.023		0.024	
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0079		0.0077		0.0061	
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.012		0.0087		0.017	
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0047		0.0043		0.0045	
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0073		0.01		0.011	
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011		0.0016		0.0011	
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0021		0.002		0.0015	
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011		0.0014		0.0022	
Surrogate Standard		Recovery		Recovery		Recovery	Limit
		(%)		(%)		(%)	(%)
198	2,2',3,3',4,5,5',6-octachlorobiphenyl	82		97		95	30-150

J = Value below reporting limit but above detection limit.

ESI

Project: New Haven
Composite 7 Elutriate Blank

Lab Number:	29522-226	29522-227	29522-228
Sample Designation:	Composite 7 Elutriate Blank - Rep 1	Composite 7 Elutriate Blank - Rep 2	Composite 7 Elutriate Blank - Rep 3
Date Sampled:	08/23/17 0840	08/23/17 0840	08/23/17 0840
Date Extracted:	08/25/17 1200	08/25/17 1200	08/25/17 1200
Date Analyzed:	09/07/17	09/08/17	09/08/17
Matrix:	Water	Water	Water
Sample Amount (mL):	920	950	950
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
28	2,4,4'-trichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
49	2,2',4,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
52	2,2',5,5'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	108	97	94	30-150

ESI

Project: New Haven
Composite 7

Lab Number:	29522-244	29522-245	29522-246
Sample Designation:	Composite 7 Elutriate - Rep 1	Composite 7 Elutriate - Rep 2	Composite 7 Elutriate - Rep 3
Date Sampled:	08/23/17 0920	08/23/17 0920	08/23/17 0920
Date Extracted:	08/25/17 1200	08/25/17 1200	08/25/17 1200
Date Analyzed:	09/07/17	09/08/17	09/08/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	950	940
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.014		0.015		0.0012	
18	2,2',5-trichlorobiphenyl	0.0057		0.0051		0.011	
28	2,4,4'-trichlorobiphenyl	0.024		0.026		0.026	
44	2,2',3,5'-tetrachlorobiphenyl	0.022		0.02		0.023	
49	2,2',4,5'-tetrachlorobiphenyl	0.022		0.023		0.024	
52	2,2',5,5'-tetrachlorobiphenyl	0.041		0.042		0.041	
66	2,3',4,4'-tetrachlorobiphenyl	0.022		0.019		0.026	
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0037	
87	2,2',3,4,5'-pentachlorobiphenyl	0.0097		0.009	J	0.011	
101	2,2',4,5,5'-pentachlorobiphenyl	0.028		0.03		0.033	
105	2,3,3',4,4'-pentachlorobiphenyl	0.0058		0.0057		0.0076	
118	2,3',4,4',5-pentachlorobiphenyl	0.02		0.014		0.024	
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0015		0.003		0.0055	
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.02		0.018		0.024	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.02		0.02		0.023	
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0061		0.0054		0.0068	
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.011		0.012		0.013	
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.0041		0.0044		0.0039	
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0071		0.0073		0.0093	
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0009	J	0.0011	
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0018		0.0014		0.0016	
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0018	

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	93	102	90	30-150

J = Value below reporting limit but above detection limit.

ESI

Project: New Haven
Composite 8

Lab Number:	29522-280	29522-281	29522-282
Sample Designation:	Composite 8 Elutriate - Rep 1	Composite 8 Elutriate - Rep 2	Composite 8 Elutriate - Rep 3
Date Sampled:	08/23/17 1223	08/23/17 1223	08/23/17 1223
Date Extracted:	08/25/17 1200	08/25/17 1200	08/25/17 1200
Date Analyzed:	09/08/17	09/08/17	09/08/17
Matrix:	Water	Water	Water
Sample Amount (mL):	930	930	930
Final Volume (mL)	0.5	0.5	0.5
Dilution Factor:	1	1	1

Number	PCB Congener	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
8	2,4'-dichlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
18	2,2',5-trichlorobiphenyl	0.00087		0.0011	U	0.0009	J
28	2,4,4'-trichlorobiphenyl	0.0017		0.0013		0.0011	U
44	2,2',3,5'-tetrachlorobiphenyl	0.0008	J	0.001	J	0.0009	J
49	2,2',4,5'-tetrachlorobiphenyl	0.0012		0.0011		0.0011	
52	2,2',5,5'-tetrachlorobiphenyl	0.0018		0.0016		0.002	
66	2,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0009	J	0.0011	U
77	3,3',4,4'-tetrachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.0014		0.0016		0.0019	
105	2,3,3',4,4'-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
118	2,3',4,4',5-pentachlorobiphenyl	0.0012		0.0011	U	0.0011	
126	3,3',4,4',5-pentachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.001	U	0.001	U	0.0013	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.0012		0.0009	J	0.0015	
156	2,3,3',4,4',5-hexachlorobiphenyl						
169	3,3',4,4',5,5'-hexachlorobiphenyl						
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0009	J
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.0011	U	0.0011	U	0.0011	U

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
198 2,2',3,3',4,5,5',6-octachlorobiphenyl	92	114	106	30-150

J = Value below reporting limit but above detection limit.

ESI

New Haven
Composite 1 Elutriate Blank

Lab Number:	29522-007	29522-008	29522-009
Sample Designation:	Composite 1 Elutriate Blank - R	Composite 1 Elutriate Blank - R	Composite 1 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/30/17	08/30/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	930
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	103	100	89	30-150

ESI

New Haven
Composite 1

Lab Number:	29522-025	29522-026	29522-027
Sample Designation:	Composite 1 Elutriate - Rep 1	Composite 1 Elutriate - Rep 2	Composite 1 Elutriate - Rep 3
Date Sampled:	08/22/17 1425	08/22/17 1425	08/22/17 1425
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/30/17	08/30/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	86	83	99	30-150

ESI

New Haven
Composite 2

Lab Number:	29522-061	29522-062	29522-063
Sample Designation:	Composite 2 Elutriate - Rep 1	Composite 2 Elutriate - Rep 2	Composite 2 Elutriate - Rep 3
Date Sampled:	08/22/17 1055	08/22/17 1055	08/22/17 1055
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/30/17	08/30/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	104	94	98	30-150

ESI

New Haven
Composite 3 Elutriate Blank

Lab Number:	29522-079	29522-080	29522-081
Sample Designation:	Composite 3 Elutriate Blank - Rep 1	Composite 3 Elutriate Blank - Rep 2	Composite 3 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/30/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	940
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	89	75	84	30-150

ESI

New Haven
Composite 3

Lab Number:	29522-097	29522-098	29522-099
Sample Designation:	Composite 3 Elutriate - Rep 1	Composite 3 Elutriate - Rep 2	Composite 3 Elutriate - Rep 3
Date Sampled:	08/22/17 1310	08/22/17 1310	08/22/17 1310
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/30/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	930	930
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	58	84	106	30-150

ESI

New Haven
Composite 4

Lab Number:	29522-133	29522-134	29522-135
Sample Designation:	Composite 4 Elutriate - Rep 1	Composite 4 Elutriate - Rep 2	Composite 4 Elutriate - Rep 3
Date Sampled:	08/22/17 1212	08/22/17 1212	08/22/17 1212
Date Extracted:	08/28/17 0800	08/28/17 0800	08/28/17 0800
Date Analyzed:	08/31/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	84	106	104	30-150

New Haven
Composite 5

Lab Number:	29522-169	29522-170	29522-171
Sample Designation:	Composite 5 Elutriate - Rep 1	Composite 5 Elutriate - Rep 2	Composite 5 Elutriate - Rep 3
Date Sampled:	08/23/17 1020	08/23/17 1020	08/23/17 1020
Date Extracted:	08/28/17 0800	08/28/17 0800	08/29/17 1200
Date Analyzed:	08/31/17	08/31/17	09/01/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	940
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	111	106	80	30-150

New Haven
CLDS Ref Site Blank

Lab Number:	29522-187	29522-188	29522-189
Sample Designation:	CLDS Ref Site Blank - Rep 1	CLDS Ref SiteBlank - Rep 2	CLDS Ref Site Blank - Rep 3
Date Sampled:	08/25/17 0930	08/25/17 0930	08/25/17 0930
Date Extracted:	08/29/17 1200	08/29/17 1200	08/29/17 1200
Date Analyzed:	09/05/17	09/05/17	09/05/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	940
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	38	32	31	30-150

New Haven
Composite 6

Lab Number:	29522-205	29522-206	29522-207
Sample Designation:	Composite 6 Elutriate - Rep 1	Composite 6 Elutriate - Rep 2	Composite 6 Elutriate - Rep 3
Date Sampled:	08/23/17 1100	08/23/17 1100	08/23/17 1100
Date Extracted:	08/29/17 1200	08/29/17 1200	08/29/17 1200
Date Analyzed:	08/31/17	09/01/17	09/01/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	920	910
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	87	62	71	30-150

New Haven
Composite 7 Elutriate Blank

Lab Number:	29522-223	29522-224	29522-225
Sample Designation:	Composite 7 Elutriate Blank - Rep 1	Composite 7 Elutriate Blank - Rep 2	Composite 7 Elutriate Blank - Rep 3
Date Sampled:	08/23/17 0840	08/23/17 0840	08/23/17 0840
Date Extracted:	08/29/17 1200	08/29/17 1200	08/29/17 1200
Date Analyzed:	09/05/17	09/05/17	09/05/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	82	75	74	30-150

ESI

New Haven
Composite 7

Lab Number:	29522-241	29522-242	29522-243
Sample Designation:	Composite 7 Elutriate - Rep 1	Composite 7 Elutriate - Rep 2	Composite 7 Elutriate - Rep 3
Date Sampled:	08/23/17 0920	08/23/17 0920	08/23/17 0920
Date Extracted:	08/29/17 1200	08/29/17 1200	08/29/17 1200
Date Analyzed:	08/31/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	62	64	70	30-150

ESI

New Haven
Composite 8

Lab Number:	29522-277	29522-278	29522-279
Sample Designation:	Composite 8 Elutriate - Rep 1	Composite 8 Elutriate - Rep 2	Composite 8 Elutriate - Rep 3
Date Sampled:	08/23/17 1223	08/23/17 1223	08/23/17 1223
Date Extracted:	08/29/17 1200	08/29/17 1200	08/29/17 1200
Date Analyzed:	09/05/17	09/05/17	09/05/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	0.50	0.50	0.50
Dilution Factor:	1	1	1

Compound	Result (ug/L)	Qual	Result (ug/L)	Qual	Result (ug/L)	Qual
pentachlorophenol	1.1	U	1.1	U	1.1	U

Surrogate Standards	Recovery (%)	Recovery (%)	Recovery (%)	Limit (%)
2,4,6-tribromophenol	88	82	79	30-150

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-016	29522-017	29522-018
Sample Designation:	Composite 1 Elutriate Blank - Rep 1	Composite 1 Elutriate Blank - Rep 2	Composite 1 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/23/17 0930	08/23/17 0930	08/23/17 0930
Date Analyzed:	08/29/17	08/29/17	08/29/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration		Analyte	Concentration		Analyte	Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U	aldrin	0.002	U	aldrin	0.002	U
gamma-chlordane (cis)	0.002	U	gamma-chlordane (cis)	0.002	U	gamma-chlordane (cis)	0.002	U
alpha-chlordane (trans)	0.002	U	alpha-chlordane (trans)	0.002	U	alpha-chlordane (trans)	0.002	U
chlopyrifos	0.002	U	chlopyrifos	0.002	U	chlopyrifos	0.002	U
dieldrin	0.004	U	dieldrin	0.004	U	dieldrin	0.004	U
4,4'-DDT	0.004	U	4,4'-DDT	0.004	U	4,4'-DDT	0.004	U
endosulfan I	0.002	U	endosulfan I	0.002	U	endosulfan I	0.002	U
endosulfan II	0.004	U	endosulfan II	0.004	U	endosulfan II	0.004	U
endrin	0.004	U	endrin	0.004	U	endrin	0.004	U
heptachlor	0.002	U	heptachlor	0.002	U	heptachlor	0.002	U
heptachlor epoxide	0.002	U	heptachlor epoxide	0.002	U	heptachlor epoxide	0.002	U
gamma-BHC (lindane)	0.002	U	gamma-BHC (lindane)	0.002	U	gamma-BHC (lindane)	0.002	U
toxaphene	0.1	U	toxaphene	0.1	U	toxaphene	0.1	U

Surrogate Standard	Recovery		Advisory Limits	Recovery	Advisory Limits	Recovery	Advisory Limits
	(%)	(%)					
tetrachloro-m-xylene	87	30 - 150		93	30 - 150	87	30 - 150
decachlorobiphenyl	100	30 - 150		105	30 - 150	100	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number: 29522-034
Sample Designation: Composite 1 Elutriate - Rep 1
Date Sampled: 08/22/17 1425
Date Extracted: 08/23/17 0930
Date Analyzed: 08/29/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 1.0
Dilution Factor: 1

29522-035
Composite 1 Elutriate - Rep 2
08/22/17 1425
08/23/17 0930
08/29/17
Water
950
1.0
1

29522-036
Composite 1 Elutriate - Rep 3
08/22/17 1425
08/23/17 0930
08/29/17
Water
930
1.0
1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration		Analyte	Concentration		Analyte	Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U	aldrin	0.002	U	aldrin	0.002	U
gamma-chlordane (cis)	0.002	U	gamma-chlordane (cis)	0.002	U	gamma-chlordane (cis)	0.002	U
alpha-chlordane (trans)	0.002	U	alpha-chlordane (trans)	0.002	U	alpha-chlordane (trans)	0.002	U
chlopyrifos	0.002	U	chlopyrifos	0.002	U	chlopyrifos	0.002	U
dieldrin	0.004	U	dieldrin	0.004	U	dieldrin	0.004	U
4,4'-DDT	0.004	U	4,4'-DDT	0.004	U	4,4'-DDT	0.004	U
endosulfan I	0.002	U	endosulfan I	0.002	U	endosulfan I	0.002	U
endosulfan II	0.004	U	endosulfan II	0.004	U	endosulfan II	0.004	U
endrin	0.004	U	endrin	0.004	U	endrin	0.004	U
heptachlor	0.002	U	heptachlor	0.002	U	heptachlor	0.002	U
heptachlor epoxide	0.002	U	heptachlor epoxide	0.002	U	heptachlor epoxide	0.002	U
gamma-BHC (lindane)	0.002	U	gamma-BHC (lindane)	0.002	U	gamma-BHC (lindane)	0.002	U
toxaphene	0.1	U	toxaphene	0.1	U	toxaphene	0.1	U

Surrogate Standard	Recovery		Advisory Limits	Recovery	Advisory Limits	Recovery	Advisory Limits
	(%)	(%)					
tetrachloro-m-xylene	78	30 - 150		67	30 - 150	68	30 - 150
decachlorobiphenyl	87	30 - 150		91	30 - 150	82	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-070	29522-071	29522-072
Sample Designation:	Composite 2 Elutriate - Rep 1	Composite 2 Elutriate - Rep 2	Composite 2 Elutriate - Rep 3
Date Sampled:	08/22/17 1055	08/22/17 1055	08/22/17 1055
Date Extracted:	08/23/17 0930	08/23/17 0930	08/23/17 0930
Date Analyzed:	08/29/17	08/29/17	08/29/17
Matrix:	Water	Water	Water
Sample Amount (mL):	910	950	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration		Concentration	Concentration		Concentration	Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U	0.002	U	0.002	U	0.002	U
gamma-chlordane (cis)	0.002	U	0.002	U	0.002	U	0.002	U
alpha-chlordane (trans)	0.002	U	0.002	U	0.002	U	0.002	U
chlopyrifos	0.002	U	0.002	U	0.002	U	0.002	U
dieldrin	0.004	U	0.004	U	0.004	U	0.004	U
4,4'-DDT	0.004	U	0.004	U	0.004	U	0.004	U
endosulfan I	0.002	U	0.002	U	0.002	U	0.002	U
endosulfan II	0.004	U	0.004	U	0.004	U	0.004	U
endrin	0.004	U	0.004	U	0.004	U	0.004	U
heptachlor	0.002	U	0.002	U	0.002	U	0.002	U
heptachlor epoxide	0.002	U	0.002	U	0.002	U	0.002	U
gamma-BHC (lindane)	0.002	U	0.002	U	0.002	U	0.002	U
toxaphene	0.1	U	0.1	U	0.1	U	0.1	U

Surrogate Standard	Recovery		Advisory Limits	Recovery	Advisory Limits	Recovery	Advisory Limits
	(%)	(%)		(%)	(%)	(%)	(%)
tetrachloro-m-xylene	47	30 - 150	62	30 - 150	82	30 - 150	30 - 150
decachlorobiphenyl	94	30 - 150	103	30 - 150	109	30 - 150	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-088	29522-089	29522-090
Sample Designation:	Composite 3 Elutriate Blank - Rep 1	Composite 3 Elutriate Blank - Rep 2	Composite 3 Elutriate Blank - Rep 3
Date Sampled:	08/22/17 1005	08/22/17 1005	08/22/17 1005
Date Extracted:	08/23/17 0930	08/23/17 0930	08/23/17 0930
Date Analyzed:	08/29/17	08/29/17	08/29/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	920	920
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration			Concentration			Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U		0.002	U		0.002	U
gamma-chlordane (cis)	0.002	U		0.002	U		0.002	U
alpha-chlordane (trans)	0.002	U		0.002	U		0.002	U
chlopyrifos	0.002	U		0.002	U		0.002	U
dieldrin	0.004	U		0.004	U		0.004	U
4,4'-DDT	0.004	U		0.004	U		0.004	U
endosulfan I	0.002	U		0.002	U		0.002	U
endosulfan II	0.004	U		0.004	U		0.004	U
endrin	0.004	U		0.004	U		0.004	U
heptachlor	0.002	U		0.002	U		0.002	U
heptachlor epoxide	0.002	U		0.0023	T		0.0032	T
gamma-BHC (lindane)	0.002	U		0.002	U		0.002	U
toxaphene	0.1	U		0.1	U		0.1	U

Surrogate Standard	Recovery		Advisory Limits		Recovery		Advisory Limits		Recovery		Advisory Limits	
	(%)	(%)			(%)	(%)			(%)	(%)		
tetrachloro-m-xylene	104		30 - 150		36		30 - 150		77		30 - 150	
decachlorobiphenyl	105		30 - 150		117		30 - 150		108		30 - 150	

U = Not detected at indicated level.

T =Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-106	29522-107	29522-108
Sample Designation:	Composite 3 Elutriate - Rep 1	Composite 3 Elutriate - Rep 2	Composite 3 Elutriate - Rep 3
Date Sampled:	08/22/17 1310	08/22/17 1310	08/22/17 1310
Date Extracted:	08/23/17 0930	08/23/17 0930	08/23/17 0930
Date Analyzed:	08/30/17	08/30/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	910	920
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Analyte	Elutriate Replicate 1		Elutriate Replicate 2		Elutriate Replicate 3	
	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier
aldrin	0.002	U	0.002	U	0.002	U
gamma-chlordane (cis)	0.002	U	0.002	U	0.002	U
alpha-chlordane (trans)	0.002	U	0.002	U	0.002	U
chlopyrifos	0.0032	T	0.0036	T	0.0034	T
dieldrin	0.004	U	0.0081	T	0.004	U
4,4'-DDT	0.004	U	0.004	U	0.004	U
endosulfan I	0.002	U	0.002	U	0.002	U
endosulfan II	0.004	U	0.004	U	0.004	U
endrin	0.004	U	0.004	U	0.004	U
heptachlor	0.002	U	0.002	U	0.002	U
heptachlor epoxide	0.002	U	0.0031	T	0.002	U
gamma-BHC (lindane)	0.002	U	0.002	U	0.002	U
toxaphene	0.1	U	0.1	U	0.1	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	109	30 - 150	110	30 - 150	121	30 - 150
decachlorobiphenyl	102	30 - 150	107	30 - 150	103	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-142	29522-143	29522-144
Sample Designation:	Composite 4 Elutriate - Rep 1	Composite 4 Elutriate - Rep 2	Composite 4 Elutriate - Rep 3
Date Sampled:	08/22/17 1212	08/22/17 1212	08/22/17 1212
Date Extracted:	08/23/17 0930	08/23/17 0930	08/23/17 0930
Date Analyzed:	08/29/17	08/29/17	08/29/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration		Concentration	Qualifier		Concentration	Qualifier	
	(ug/L)			(ug/L)			(ug/L)	
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.002	U		0.002	U	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.002	U	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.002	U	0.002	U		0.002	U	
gamma-BHC (lindane)	0.002	U	0.002	U		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery		Advisory Limits		Recovery	Advisory Limits		Recovery	Advisory Limits	
	(%)		(%)			(%)			(%)	
tetrachloro-m-xylene	82		30 - 150		79	30 - 150		77	30 - 150	
decachlorobiphenyl	96		30 - 150		99	30 - 150		91	30 - 150	

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-178	29522-179	29522-180
Sample Designation:	Composite 5 Elutriate - Rep 1	Composite 5 Elutriate - Rep 2	Composite 5 Elutriate - Rep 3
Date Sampled:	08/23/17 1020	08/23/17 1020	08/23/17 1020
Date Extracted:	08/23/17 0930	08/23/17 0930	08/24/17 0830
Date Analyzed:	08/30/17	08/29/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier		Concentration (ug/L)	Qualifier	
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.002	U		0.002	U	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.0033	T	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.002	U	0.002	U		0.002	U	
gamma-BHC (lindane)	0.002	U	0.002	U		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	83	30 - 150	41	30 - 150	45	30 - 150
decachlorobiphenyl	109	30 - 150	101	30 - 150	44	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number: 29522-196
Sample Designation: CLDS Ref Site Blank - Rep 1
Date Sampled: 08/25/17 0930
Date Extracted: 08/24/17 0830
Date Analyzed: 08/31/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 1.0
Dilution Factor: 1

29522-197
CLDS Ref Site Blank - Rep 2
08/25/17 0930
08/24/17 0830
08/31/17
Water
940
1.0
1

29522-198
CLDS Ref Site Blank - Rep 3
08/25/17 0930
08/24/17 0830
08/31/17
Water
940
1.0
1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier		Concentration (ug/L)	Qualifier	
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.002	U		0.002	U	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.002	U	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.0043	T	0.0038	T		0.0037	T	
gamma-BHC (lindane)	0.002	U	0.002	U		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	150	30 - 150	132	30 - 150	123	30 - 150
decachlorobiphenyl	8,J17	30 - 150	3,J17	30 - 150	5,J17	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

J17 = SUR %R below limit.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-214	29522-215	29522-216
Sample Designation:	Composite 6 Elutriate - Rep 1	Composite 6 Elutriate - Rep 2	Composite 6 Elutriate - Rep 3
Date Sampled:	08/23/17 1100	08/23/17 1100	08/23/17 1100
Date Extracted:	08/24/17 0830	08/24/17 0830	08/24/17 0830
Date Analyzed:	08/30/17	08/30/17	08/30/17
Matrix:	Water	Water	Water
Sample Amount (mL):	950	950	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier		Concentration (ug/L)	Qualifier	
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.002	U		0.002	U	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.002	U	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.002	U	0.002	U		0.002	U	
gamma-BHC (lindane)	0.002	U	0.002	U		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	82	30 - 150	54	30 - 150	99	30 - 150
decachlorobiphenyl	80	30 - 150	75	30 - 150	95	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-232	29522-233	29522-234
Sample Designation:	Composite 7 Elutriate Blank - Rep 1	Composite 7 Elutriate Blank - Rep 2	Composite 7 Elutriate Blank - Rep 3
Date Sampled:	08/23/17 0840	08/23/17 0840	08/23/17 0840
Date Extracted:	08/24/17 0830	08/24/17 0830	08/24/17 0830
Date Analyzed:	08/30/17	08/30/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	940	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration			Concentration			Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U		0.002	U		0.002	U
gamma-chlordane (cis)	0.002	U		0.002	U		0.002	U
alpha-chlordane (trans)	0.002	U		0.002	U		0.002	U
chlopyrifos	0.002	U		0.002	U		0.002	U
dieldrin	0.004	U		0.004	U		0.004	U
4,4'-DDT	0.004	U		0.004	U		0.004	U
endosulfan I	0.002	U		0.002	U		0.002	U
endosulfan II	0.004	U		0.004	U		0.004	U
endrin	0.004	U		0.004	U		0.004	U
heptachlor	0.002	U		0.002	U		0.002	U
heptachlor epoxide	0.002	U		0.002	U		0.002	U
gamma-BHC (lindane)	0.002	U		0.002	U		0.002	U
toxaphene	0.1	U		0.1	U		0.1	U

Surrogate Standard	Recovery		Advisory Limits		Recovery	Advisory Limits			Recovery	Advisory Limits	
	(%)	(%)				(%)	(%)			(%)	(%)
tetrachloro-m-xylene	53		30 - 150		57		30 - 150		74		30 - 150
decachlorobiphenyl	76		30 - 150		76		30 - 150		88		30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-250	29522-251	29522-252
Sample Designation:	Composite 7 Elutriate - Rep 1	Composite 7 Elutriate - Rep 2	Composite 7 Elutriate - Rep 3
Date Sampled:	08/23/17 0920	08/23/17 0920	08/23/17 0920
Date Extracted:	08/24/17 0830	08/24/17 0830	08/24/17 0830
Date Analyzed:	08/30/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	940	930	910
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration		Concentration	Concentration		Concentration	Concentration	
	(ug/L)	Qualifier		(ug/L)	Qualifier		(ug/L)	Qualifier
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.0048	T		0.0046	T	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.002	U	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.002	U	0.002	U		0.0071	T	
gamma-BHC (lindane)	0.002	U	0.0029	T		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery		Advisory Limits	Recovery	Advisory Limits	Recovery	Advisory Limits
	(%)	(%)					
tetrachloro-m-xylene	46	30 - 150		62	30 - 150	68	30 - 150
decachlorobiphenyl	98	30 - 150		90	30 - 150	120	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

ESI

Pesticides in Elutriates
SW 846 8081B

Lab Number:	29522-286	29522-287	29522-288
Sample Designation:	Composite 8 Elutriate - Rep 1	Composite 8 Elutriate - Rep 2	Composite 8 Elutriate - Rep 3
Date Sampled:	08/23/17 1223	08/23/17 1223	08/23/17 1223
Date Extracted:	08/24/17 0830	08/24/17 0830	08/24/17 0830
Date Analyzed:	08/31/17	08/31/17	08/31/17
Matrix:	Water	Water	Water
Sample Amount (mL):	960	950	950
Final Volume (mL)	1.0	1.0	1.0
Dilution Factor:	1	1	1

Elutriate Replicate 1			Elutriate Replicate 2			Elutriate Replicate 3		
Analyte	Concentration (ug/L)	Qualifier	Concentration (ug/L)	Qualifier		Concentration (ug/L)	Qualifier	
aldrin	0.002	U	0.002	U		0.002	U	
gamma-chlordane (cis)	0.002	U	0.002	U		0.002	U	
alpha-chlordane (trans)	0.002	U	0.002	U		0.002	U	
chlopyrifos	0.002	U	0.002	U		0.002	U	
dieldrin	0.004	U	0.004	U		0.004	U	
4,4'-DDT	0.004	U	0.004	U		0.004	U	
endosulfan I	0.002	U	0.002	U		0.002	U	
endosulfan II	0.004	U	0.004	U		0.004	U	
endrin	0.004	U	0.004	U		0.004	U	
heptachlor	0.002	U	0.002	U		0.002	U	
heptachlor epoxide	0.004	T	0.0039	T		0.0028	T	
gamma-BHC (lindane)	0.002	U	0.002	U		0.002	U	
toxaphene	0.1	U	0.1	U		0.1	U	

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	57	30 - 150	26,J17	30 - 150	45	30 - 150
decachlorobiphenyl	81	30 - 150	75	30 - 150	68	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

J17 = SUR %R below limit.

ESI

Quality Control Summary

Parameter: Arsenic, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.0005	0.0005	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0249	0.025	100	0.0248	0.025	99	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0192		0.0194		1		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.1430	0.125	0.0194		99		Pass
29522-019SD	80-120	0.1450	0.125	0.0194		100		Pass

U = Below quantitation limit

ESI

Quality Control Summary

Parameter: Cadmium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.0001	0.0001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0126	0.0125	101	0.0125	0.0125	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0001	U	0.0001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.0605	0.0625	0.0001	U	97		Pass
29522-019SD	80-120	0.0601	0.0625	0.0001	U	96		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Chromium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.001	0.001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0198	0.020	99	0.0199	0.020	99	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.001	U	0.001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.102	0.100	0.001	U	102		Pass
29522-019SD	80-120	0.0997	0.100	0.001	U	100		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Copper, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.0005	0.0005	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0244	0.025	98	0.0248	0.025	99	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0005	U	0.0005	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.121	0.125	0.0005	U	97		Pass
29522-019SD	80-120	0.118	0.125	0.0005	U	94		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Lead, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.0002	0.0002	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0251	0.025	100	0.0250	0.025	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0002	U	0.0002	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.128	0.125	0.0002	U	102		Pass
29522-019SD	80-120	0.127	0.125	0.0002	U	102		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Mercury, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 268W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-022	Composite 1 Elutriate - Rep 1	29522-095	Composite 3 Elutriate - Rep 2
29522-023	Composite 1 Elutriate - Rep 2	29522-096	Composite 3 Elutriate - Rep 3
29522-024	Composite 1 Elutriate - Rep 3	29522-076	Composite 3 Elutriate Blank - Rep 1
29522-004	Composite 1 Elutriate Blank - Rep 1	29522-077	Composite 3 Elutriate Blank - Rep 2
29522-005	Composite 1 Elutriate Blank - Rep 2	29522-078	Composite 3 Elutriate Blank - Rep 3
29522-006	Composite 1 Elutriate Blank - Rep 3	29522-130	Composite 4 Elutriate - Rep 1
29522-058	Composite 2 Elutriate - Rep 1	29522-131	Composite 4 Elutriate - Rep 2
29522-059	Composite 2 Elutriate - Rep 2	29522-132	Composite 4 Elutriate - Rep 3
29522-060	Composite 2 Elutriate - Rep 3		
29522-094	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result ug/L	Q	M
PB268W	0.01	0.01	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/L	True Value ug/L	%R	Lab Control Dup Sample Result ug/L	True Value ug/L	%R	
LCS	85-115	0.097	0.100	97	0.098	0.100	98	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/L	Q	Sample Result ug/L	Q	RPD	Q	
29522-022	20	0.01	U	0.01	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/L	Spike Added ug/L	Sample Result ug/L	Q	%R	Q	
29522-022S	80-120	0.100	0.100	0.01	U	100		Pass
29522-022SD	80-120	0.101	0.100	0.01	U	101		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Nickel, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.001	0.001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0492	0.050	98	0.0500	0.050	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.001	U	0.001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.244	0.250	0.001	U	98		Pass
29522-019SD	80-120	0.242	0.250	0.001	U	97		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Selenium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.001	0.001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0247	0.025	99	0.0249	0.025	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.001	U	0.001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.130	0.125	0.001	U	104		Pass
29522-019SD	80-120	0.127	0.125	0.001	U	102		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Silver, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.0002	0.0002	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0252	0.025	101	0.0252	0.025	101	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0002	U	0.0002	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.123	0.125	0.0002	U	98		Pass
29522-019SD	80-120	0.122	0.125	0.0002	U	98		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Zinc, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 534W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-019	Composite 1 Elutriate - Rep 1	29522-092	Composite 3 Elutriate - Rep 2
29522-020	Composite 1 Elutriate - Rep 2	29522-093	Composite 3 Elutriate - Rep 3
29522-021	Composite 1 Elutriate - Rep 3	29522-055	Composite 2 Elutriate - Rep 1
29522-073	Composite 3 Elutriate Blank - Rep 1	29522-056	Composite 2 Elutriate - Rep 2
29522-074	Composite 3 Elutriate Blank - Rep 2	29522-057	Composite 2 Elutriate - Rep 3
29522-075	Composite 3 Elutriate Blank - Rep 3	29522-127	Composite 4 Elutriate - Rep 1
29522-001	Composite 1 Elutriate Blank - Rep 1	29522-128	Composite 4 Elutriate - Rep 2
29522-002	Composite 1 Elutriate Blank - Rep 2	29522-129	Composite 4 Elutriate - Rep 3
29522-003	Composite 1 Elutriate Blank - Rep 3		
29522-091	Composite 3 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB534W	0.002	0.002	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0493	0.050	99	0.0498	0.050	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-019	20	0.0048		0.0048		NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-019S	80-120	0.243	0.250	0.0048		95		Pass
29522-019SD	80-120	0.238	0.250	0.0048		93		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Hexavalent Chromium
 Project: New Haven
 Matrix: Water
 QC Batch No: 444W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-013	Composite 1 Elutriate Blank - Rep 1	29522-086	Composite 3 Elutriate Blank - Rep 2
29522-014	Composite 1 Elutriate Blank - Rep 2	29522-087	Composite 3 Elutriate Blank - Rep 3
29522-015	Composite 1 Elutriate Blank - Rep 3	29522-103	Composite 3 Elutriate - Rep 1
29522-031	Composite 1 Elutriate - Rep 1	29522-104	Composite 3 Elutriate - Rep 2
29522-032	Composite 1 Elutriate - Rep 2	29522-105	Composite 3 Elutriate - Rep 3
29522-033	Composite 1 Elutriate - Rep 3	29522-139	Composite 4 Elutriate - Rep 1
29522-067	Composite 2 Elutriate - Rep 1	29522-140	Composite 4 Elutriate - Rep 2
29522-068	Composite 2 Elutriate - Rep 2	29522-141	Composite 4 Elutriate - Rep 3
29522-069	Composite 2 Elutriate - Rep 3	29522-141	Composite 4 Elutriate - Rep 3
29522-085	Composite 3 Elutriate Blank - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB444W	0.005	0.005		High

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.101	0.100	101	0.103	0.100	103	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-013	20	0.005	U	0.005	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-013S	80-120	0.105	0.100	0.005	U	105		Pass
29522-013SD	80-120	0.100	0.100	0.005	U	100		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Arsenic, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.0005	0.0005	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0247	0.025	99	0.0249	0.025	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0447		0.0440		2		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.1660	0.125	0.0440		98		Pass
29522-163SD	80-120	0.1660	0.125	0.0440		98		Pass

U = Below quantitation limit

ESI

Quality Control Summary

Parameter: Cadmium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.0001	0.0001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0121	0.0125	97	0.0122	0.0125	98	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0001	U	0.0001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.0576	0.0625	0.0001	U	92		Pass
29522-163SD	80-120	0.0581	0.0625	0.0001	U	93		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Chromium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.001	0.001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0194	0.020	97	0.0194	0.020	97	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0014		0.0014		NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.098	0.100	0.0014		96		Pass
29522-163SD	80-120	0.0977	0.100	0.0014		96		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Copper, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.0005	0.0005	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0237	0.025	95	0.0237	0.025	95	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0005	U	0.0005	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.114	0.125	0.0005	U	91		Pass
29522-163SD	80-120	0.113	0.125	0.0005	U	90		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Lead, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q		M
PB535W	0.0002	0.0002	U		Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0249	0.025	100	0.0250	0.025	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0002	U	0.0002	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.127	0.125	0.0002	U	102		Pass
29522-163SD	80-120	0.127	0.125	0.0002	U	102		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Mercury, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 269W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-166	Composite 5 Elutriate - Rep 1	29522-239	Composite 7 Elutriate - Rep 2
29522-167	Composite 5 Elutriate - Rep 2	29522-240	Composite 7 Elutriate - Rep 3
29522-168	Composite 5 Elutriate - Rep 3	29522-220	Composite 7 Elutriate Blank - Rep 1
29522-184	CLDS Ref Site Blank - Rep 1	29522-221	Composite 7 Elutriate Blank - Rep 2
29522-185	CLDS Ref Site Blank - Rep 2	29522-222	Composite 7 Elutriate Blank - Rep 3
29522-186	CLDS Ref Site Blank - Rep 3	29522-274	Composite 8 Elutriate - Rep 1
29522-202	Composite 6 Elutriate - Rep 1	29522-275	Composite 8 Elutriate - Rep 2
29522-203	Composite 6 Elutriate - Rep 2	29522-276	Composite 8 Elutriate - Rep 3
29522-204	Composite 6 Elutriate - Rep 3		
29522-238	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result ug/L	Q	M
PB269W	0.01	0.01	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/L	True Value ug/L	%R	Lab Control Dup Sample Result ug/L	True Value ug/L	%R	
LCS	85-115	0.092	0.100	92	0.097	0.100	97	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/L	Q	Sample Result ug/L	Q	RPD	Q	
29522-166	20	0.01	U	0.01	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/L	Spike Added ug/L	Sample Result ug/L	Q	%R	Q	
29522-166S	80-120	0.096	0.100	0.01	U	96		Pass
29522-166SD	80-120	0.092	0.100	0.01	U	92		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Nickel, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.001	0.001	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0477	0.050	95	0.0480	0.050	96	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.001	U	0.001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.233	0.250	0.001	U	93		Pass
29522-163SD	80-120	0.231	0.250	0.001	U	92		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Selenium, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q		M
PB535W	0.001	0.001	U		Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0252	0.025	101	0.0250	0.025	100	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.001	U	0.001	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.126	0.125	0.001	U	101		Pass
29522-163SD	80-120	0.126	0.125	0.001	U	101		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Silver, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.0002	0.0002	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0240	0.025	96	0.0241	0.025	96	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0002	U	0.0002	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.116	0.125	0.0002	U	93		Pass
29522-163SD	80-120	0.117	0.125	0.0002	U	94		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Zinc, total
 Project: New Haven
 Matrix: Water
 QC Batch No: 535W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-163	Composite 5 Elutriate - Rep 1	29522-236	Composite 7 Elutriate - Rep 2
29522-164	Composite 5 Elutriate - Rep 2	29522-237	Composite 7 Elutriate - Rep 3
29522-165	Composite 5 Elutriate - Rep 3	29522-199	Composite 6 Elutriate - Rep 1
29522-181	CLDS Ref Site Blank - Rep 1	29522-200	Composite 6 Elutriate - Rep 2
29522-182	CLDS Ref Site Blank - Rep 2	29522-201	Composite 6 Elutriate - Rep 3
29522-183	CLDS Ref Site Blank - Rep 3	29522-217	Composite 7 Elutriate Blank - Rep 1
29522-271	Composite 8 Elutriate - Rep 1	29522-218	Composite 7 Elutriate Blank - Rep 2
29522-272	Composite 8 Elutriate - Rep 2	29522-219	Composite 7 Elutriate Blank - Rep 3
29522-273	Composite 8 Elutriate - Rep 3		
29522-235	Composite 7 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB535W	0.002	0.002	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.0473	0.050	95	0.0475	0.050	95	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-163	20	0.0059		0.0061		NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-163S	80-120	0.231	0.250	0.0061		90		Pass
29522-163SD	80-120	0.230	0.250	0.0061		90		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Hexavalent Chromium
 Project: New Haven
 Matrix: Water
 QC Batch No: 445W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-175	Composite 5 Elutriate - Rep 1	29522-284	Composite 8 Elutriate - Rep 2
29522-176	Composite 5 Elutriate - Rep 2	29522-285	Composite 8 Elutriate - Rep 3
29522-177	Composite 5 Elutriate - Rep 3		
29522-211	Composite 6 Elutriate - Rep 1		
29522-212	Composite 6 Elutriate - Rep 2		
29522-213	Composite 6 Elutriate - Rep 3		
29522-229	Composite 7 Elutriate Blank - Rep 1		
29522-230	Composite 7 Elutriate Blank - Rep 2		
29522-231	Composite 7 Elutriate Blank - Rep 3		
29522-283	Composite 8 Elutriate - Rep 1		

	Control Limit +/-	Preparation Blank Result mg/L	Q		M
PB445W	0.005	0.005	U		Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.105	0.100	105	0.103	0.100	103	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29522-175	20	0.005	U	0.005	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29522-175S	80-120	0.089	0.100	0.005	U	89		Pass
29522-175SD	80-120	0.090	0.100	0.005	U	90		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Quality Control Summary

Parameter: Hexavalent Chromium
 Project: New Haven
 Matrix: Water
 QC Batch No: 446W

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
29522-193	CLDS Ref Site Blank - Rep 1		
29522-194	CLDS Ref Site Blank - Rep 2		
29522-195	CLDS Ref Site Blank - Rep 3		

	Control Limit +/-	Preparation Blank Result mg/L	Q	M
PB446W	0.005	0.005	U	Pass

LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result mg/L	True Value mg/L	%R	Lab Control Dup Sample Result mg/L	True Value mg/L	%R	
LCS	85-115	0.105	0.100	105	0.103	0.100	103	Pass

DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result mg/L	Q	Sample Result mg/L	Q	RPD	Q	
29552-193	20	0.005	U	0.005	U	NC		Pass

SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result mg/L	Spike Added mg/L	Sample Result mg/L	Q	%R	Q	
29552-193S	80-120	0.096	0.100	0.005	U	96		Pass
29552-193SD	80-120	0.101	0.100	0.005	U	101		Pass

U = Below quantitation limit

NC = Not calculated due to one or both values less than five times the reporting limit.

ESI

Metals by ICPMS
EPA 200.8

Lab Number: MDL2017
Sample Designation: Water
Date Analyzed: 03/07/17
Matrix: Salt water
Sample Amount (mL): 1
Final Volume (mL) 50

	True Value ug/L	MDLA2017 MDLB2017 MDLC2017 MDLD2017 MDLE2017 MDLF2017 MDLG2017										Std Dev ug/L	MDL ug/L
		Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L	Found ug/L		
Aluminum, total	1	1.092	0.958	0.899	0.8	0.692	1.548	0.749	0.2696	0.847			
Antimony, total	0.05	0.017	0.023	0.017	0.018	0.022	0.016	0.017	0.0026	0.008			
Arsenic, total	0.125	0.046	0.047	0.043	0.051	0.035	0.057	0.044	0.0063	0.020			
Barium, total	1	0.383	0.388	0.407	0.345	0.453	0.382	0.426	0.0322	0.101			
Beryllium, total	0.025	0.013	0.012	0.012	0.013	0.012	0.01	0.011	0.0010	0.003			
Cadmium, total	0.0625	0.023	0.023	0.024	0.025	0.026	0.026	0.026	0.0013	0.004			
Chromium, total	0.1	0.061	0.081	0.079	0.077	0.088	0.076	0.075	0.0076	0.024			
Cobalt, total	0.25	0.097	0.103	0.101	0.099	0.103	0.109	0.109	0.0043	0.013			
Copper, total	0.125	0.049	0.041	0.057	0.062	0.053	0.062	0.068	0.0085	0.027			
Iron, total	0.5	0.363	0.41	0.361	0.35	0.431	0.434	0.383	0.0322	0.101			
Lead, total	0.125	0.043	0.05	0.049	0.051	0.046	0.049	0.041	0.0035	0.011			
Manganese, total	0.25	0.11	0.101	0.098	0.112	0.109	0.099	0.104	0.0052	0.016			
Nickel, total	0.25	0.112	0.097	0.087	0.109	0.109	0.084	0.121	0.0127	0.040			
Selenium, total	0.125	0.048	0.045	0.063	0.064	0.032	0.063	0.055	0.0111	0.035			
Silver, total	0.125	0.051	0.05	0.053	0.049	0.049	0.046	0.053	0.0023	0.007			
Thallium, total	0.125	0.05	0.045	0.04	0.044	0.037	0.055	0.055	0.0065	0.020			
Tin, total	0.1	0.042	0.037	0.026	0.036	0.031	0.044	0.035	0.0057	0.018			
Vanadium, total	0.25	0.063	0.076	0.097	0.088	0.099	0.149	0.131	0.0279	0.088			
Zinc, total	0.25	0.208	0.204	0.154	0.166	0.194	0.245	0.194	0.0274	0.086			

EnviroSystems, Inc.
Method Detection Limit Evaluation Results

Group: Inorganic Wet Chemistry
MDL Year: 2017
Lab Number: MDL2017
Sample Designation: Water
Date Analyzed: 01/11/17- 03/22/17
Matrix: Freshwater

Parameter	EPA Method Reference	Reference Value (mg/L)	Rep A mg/L	Rep B mg/L	Rep C mg/L	Rep D mg/L	Rep E mg/L	Rep F mg/L	Rep G mg/L	MDL mg/L
Alkalinity as CaCO ₃	EPA 310.2	2	2.22	1.74	1.78	2.18	2.06	1.63	1.58	0.77
Ammonia-N	SM 4500-NH ₃ G	0.1	0.0898	0.102	0.0951	0.092	0.0957	0.0972	0.0929	0.012
Ammonia-N, distilled	SM 4500-NH ₃ B	0.2	0.199	0.239	0.184	0.184	0.199	0.222	0.207	0.058
Chemical oxygen demand	SM4500 5220 C	25	31.7	30	33.5	28.3	25.1	31.4	28.3	8.1
Chloride	EPA 300.0	2	2.28	2.18	2.21	2.21	2.2	2.33	2.33	0.18
Fluoride	EPA 300.0	0.2	0.24	0.25	0.31	0.28	0.22	0.22	0.28	0.10
Hexavalent Chromium	SM 3500-Cr D	0.005	0.006	0.006	0.005	0.006	0.005	0.006	0.006	0.000
Nitrate	EPA 300.0	0.1	0.12	0.11	0.13	0.11	0.1	0.11	0.11	0.03
Nitrate plus nitrite-N	SM 4500-NO ₃ F	0.05	0.0472	0.0434	0.0439	0.0481	0.0444	0.0483	0.0511	0.008
Nitrite	EPA 300.0	0.1	0.14	0.12	0.13	0.13	0.12	0.1	0.15	0.047
Nitrite	SM 4500-NO ₃ F	0.05	0.0493	0.05	0.0491	0.0479	0.0498	0.0486	0.0535	0.005
Sulfate	EPA 300.0	0.8	0.81	0.97	0.68	0.71	0.68	0.9	0.77	0.33
Sulfide	SW 846 9034	0.04	0.038	0.039	0.038	0.029	0.027	0.025	0.027	0.018
Total Kjeldahl Nitrogen	SM 4500-N C	0.5	0.583	0.565	0.548	0.589	0.55	0.528	0.553	0.06
Total Solids	SM 2540B	20	20	20	18	24	18	22	22	6.5
Total cyanide	SM 4500-CN C	0.01	0.009	0.01	0.008	0.008	0.006	0.011	0.014	0.011
Total dissolved solids	SM 2540C	10	9	9	11	9	10	9	9	2.3
Total phosphorus	SM 4500-P E	0.01	0.01	0.012	0.012	0.007	0.007	0.005	0.007	0.008
Total suspended solids	SM 2540D	1	0.9	1	1	1.1	0.8	1.1	0.8	0.37
ortho-Phosphate Phosphorus	SM 4500-P E	0.005	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.001

Lab Number:	PB005W
Sample Designation:	Laboratory Blank
Date Sampled:	08/24/17 1500
Date Extracted:	08/24/17 1500
Date Analyzed:	09/06/17
Matrix:	Water
Sample Amount (mL):	1000
Final Volume (mL)	0.50
Dilution Factor:	1

Congener Number	PCB Congener	Concentration (ug/L)	Qualifier
8	2,4'-dichlorobiphenyl	0.001	U
18	2,2',5-trichlorobiphenyl	0.001	U
28	2,4,4'-trichlorobiphenyl	0.001	U
44	2,2',3,5'-tetrachlorobiphenyl	0.001	U
49	2,2',4,5'-tetrachlorobiphenyl	0.001	U
52	2,2',5,5'-tetrachlorobiphenyl	0.001	U
66	2,3',4,4'-tetrachlorobiphenyl	0.001	U
77	3,3',4,4'-tetrachlorobiphenyl	0.001	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.001	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.001	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.001	U
118	2,3',4,4',5-pentachlorobiphenyl	0.001	U
126	3,3',4,4',5-pentachlorobiphenyl	0.001	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.001	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.001	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.001	U
156	2,3,3',4,4',5-hexachlorobiphenyl		
169	3,3',4,4',5,5'-hexachlorobiphenyl		
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.001	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.001	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.001	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.001	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.001	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.001	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.001	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.001	U
Surrogate Standard		Recovery (%)	Advisory Limits (%)
PCB 198		109	30 - 150

Lab Number: LCS005W / LCSD005W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/24/17 1500
Date Extracted: 08/24/17 1500
Date Analyzed: 09/06/17
Matrix: Water
Sample Amount (g): 1000
Final Volume (mL): 0.50
Dilution Factor: 1

Congener Number	PCB Congener	True Value (ug/L)	LCS Result (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	0.100	0.085	85	30 - 150	0.079	79	30 - 150	8	30
18	2,2',5-trichlorobiphenyl	0.100	0.080	80	30 - 150	0.076	76	30 - 150	4	30
28	2,4,4'-trichlorobiphenyl	0.100	0.085	85	30 - 150	0.079	79	30 - 150	8	30
44	2,2',3,5'-tetrachlorobiphenyl	0.100	0.087	87	30 - 150	0.086	86	30 - 150	1	30
49	2,2',4,5'-tetrachlorobiphenyl	0.100	0.070	70	30 - 150	0.067	67	30 - 150	4	30
52	2,2',5,5'-tetrachlorobiphenyl	0.100	0.084	84	30 - 150	0.084	84	30 - 150	1	30
66	2,3',4,4'-tetrachlorobiphenyl	0.100	0.087	87	30 - 150	0.082	82	30 - 150	6	30
77	3,3',4,4'-tetrachlorobiphenyl	0.100	0.089	89	30 - 150	0.084	84	30 - 150	6	30
87	2,2',3,4,5'-pentachlorobiphenyl	0.100	0.074	74	30 - 150	0.074	74	30 - 150	0	30
101	2,2',4,5,5'-pentachlorobiphenyl	0.100	0.086	86	30 - 150	0.084	84	30 - 150	1	30
105	2,3,3',4,4'-pentachlorobiphenyl	0.100	0.085	85	30 - 150	0.083	83	30 - 150	3	30
118	2,3',4,4',5-pentachlorobiphenyl	0.100	0.083	83	30 - 150	0.081	81	30 - 150	2	30
126	3,3',4,4',5-pentachlorobiphenyl	0.100	0.085	85	30 - 150	0.089	89	30 - 150	5	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.100	0.081	81	30 - 150	0.085	85	30 - 150	6	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.100	0.079	79	30 - 150	0.083	83	30 - 150	5	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.100	0.081	81	30 - 150	0.080	80	30 - 150	1	30
156	2,3,3',4,4',5-hexachlorobiphenyl				30 - 150			30 - 150		30
169	3,3',4,4',5,5'-hexachlorobiphenyl				30 - 150			30 - 150		30
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.100	0.077	77	30 - 150	0.083	83	30 - 150	8	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.100	0.074	74	30 - 150	0.080	80	30 - 150	7	30
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.100	0.066	66	30 - 150	0.069	69	30 - 150	5	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.100	0.068	68	30 - 150	0.069	69	30 - 150	1	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.100	0.077	77	30 - 150	0.082	82	30 - 150	7	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.100	0.070	70	30 - 150	0.077	77	30 - 150	9	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.100	0.066	66	30 - 150	0.078	78	30 - 150	17	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.100	0.067	67	30 - 150	0.071	71	30 - 150	7	30

Surrogate Standard		Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
198	2,2',3,3',4,5,5',6-octachlorobiphenyl	104	30 - 150	108	30 - 150

Lab Number: 29522-100MSD
Sample Designation: Composite 3 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/24/17 1500
Date Extracted: 08/24/17 1500
Date Analyzed: 09/06/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 0.50
Dilution Factor: 1.00

Congener Number	PCB Congener	Sample Result (ug/L)	Amount Added (ug/L)	MS Result (ug/L)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	ND	0.105	0.090	85	30 - 150	0.088	83	30 - 150	2	30
18	2,2',5-trichlorobiphenyl	ND	0.105	0.085	81	30 - 150	0.087	81	30 - 150	1	30
28	2,4,4'-trichlorobiphenyl	ND	0.105	0.088	83	30 - 150	0.094	88	30 - 150	7	30
44	2,2',3,5'-tetrachlorobiphenyl	ND	0.105	0.091	87	30 - 150	0.100	94	30 - 150	9	30
49	2,2',4,5'-tetrachlorobiphenyl	ND	0.105	0.074	70	30 - 150	0.079	74	30 - 150	7	30
52	2,2',5,5'-tetrachlorobiphenyl	ND	0.105	0.088	83	30 - 150	0.093	87	30 - 150	6	30
66	2,3',4,4'-tetrachlorobiphenyl	ND	0.105	0.091	86	30 - 150	0.092	87	30 - 150	2	30
77	3,3',4,4'-tetrachlorobiphenyl	ND	0.105	0.091	86	30 - 150	0.100	94	30 - 150	10	30
87	2,2',3,4,5'-pentachlorobiphenyl	ND	0.105	0.081	77	30 - 150	0.086	81	30 - 150	6	30
101	2,2',4,5,5'-pentachlorobiphenyl	ND	0.105	0.090	86	30 - 150	0.092	87	30 - 150	2	30
105	2,3,3',4,4'-pentachlorobiphenyl	ND	0.105	0.090	85	30 - 150	0.090	85	30 - 150	0	30
118	2,3',4,4',5-pentachlorobiphenyl	ND	0.105	0.088	84	30 - 150	0.092	86	30 - 150	4	30
126	3,3',4,4',5-pentachlorobiphenyl	ND	0.105	0.101	96	30 - 150	0.100	95	30 - 150	0	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	ND	0.105	0.096	91	30 - 150	0.094	89	30 - 150	2	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	ND	0.105	0.093	88	30 - 150	0.093	87	30 - 150	0	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	ND	0.105	0.088	84	30 - 150	0.086	81	30 - 150	2	30
156	2,3,3',4,4',5-hexachlorobiphenyl										
169	3,3',4,4',5,5'-hexachlorobiphenyl										
170	2,2',3,3',4,4',5-heptachlorobiphenyl	ND	0.105	0.093	89	30 - 150	0.089	84	30 - 150	4	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	ND	0.105	0.089	85	30 - 150	0.087	82	30 - 150	3	30
183	2,2',3,4,4',5',6-heptachlorobiphenyl	ND	0.105	0.078	74	30 - 150	0.077	72	30 - 150	1	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	ND	0.105	0.075	71	30 - 150	0.074	69	30 - 150	2	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	ND	0.105	0.094	89	30 - 150	0.091	86	30 - 150	3	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	ND	0.105	0.088	84	30 - 150	0.082	77	30 - 150	8	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	ND	0.105	0.085	81	30 - 150	0.084	79	30 - 150	1	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	ND	0.105	0.084	80	30 - 150	0.078	73	30 - 150	8	30

Surrogate Standard	MS Recovery (%)	Advisory Limits (%)	MSD Recovery (%)	Advisory Limits (%)
PCB 198	119	30 - 150	94	30 - 150

PCB Congeners in Water
SW 846 8082/EPA 680 modified

Lab Number:	PB006W
Sample Designation:	Laboratory Blank
Date Sampled:	08/25/17 1200
Date Extracted:	08/25/17 1200
Date Analyzed:	09/06/17
Matrix:	Water
Sample Amount (mL):	1000
Final Volume (mL)	0.50
Dilution Factor:	1

Congener Number	PCB Congener	Concentration (ug/L)	Qualifier
8	2,4'-dichlorobiphenyl	0.001	U
18	2,2',5-trichlorobiphenyl	0.001	U
28	2,4,4'-trichlorobiphenyl	0.001	U
44	2,2',3,5'-tetrachlorobiphenyl	0.001	U
49	2,2',4,5'-tetrachlorobiphenyl	0.001	U
52	2,2',5,5'-tetrachlorobiphenyl	0.001	U
66	2,3',4,4'-tetrachlorobiphenyl	0.001	U
77	3,3',4,4'-tetrachlorobiphenyl	0.001	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.001	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.001	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.001	U
118	2,3',4,4',5-pentachlorobiphenyl	0.001	U
126	3,3',4,4',5-pentachlorobiphenyl	0.001	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.001	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.001	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.001	U
156	2,3,3',4,4',5-hexachlorobiphenyl		
169	3,3',4,4',5,5'-hexachlorobiphenyl		
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.001	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.001	U
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.001	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.001	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.001	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.001	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.001	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.001	U
Surrogate Standard		Recovery (%)	Advisory Limits (%)
PCB 198		111	30 - 150

Lab Number: LCS006W / LCSD006W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/25/17 1200
Date Extracted: 08/25/17 1200
Date Analyzed: 09/06/17
Matrix: Water
Sample Amount (g): 1000
Final Volume (mL): 0.50
Dilution Factor: 1

Congener Number	PCB Congener	True Value (ug/L)	LCS Result (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	0.100	0.080	80	30 - 150	0.071	71	30 - 150	12	30
18	2,2',5-trichlorobiphenyl	0.100	0.079	79	30 - 150	0.070	70	30 - 150	12	30
28	2,4,4'-trichlorobiphenyl	0.100	0.082	82	30 - 150	0.071	71	30 - 150	14	30
44	2,2',3,5'-tetrachlorobiphenyl	0.100	0.086	86	30 - 150	0.075	75	30 - 150	14	30
49	2,2',4,5'-tetrachlorobiphenyl	0.100	0.070	70	30 - 150	0.059	59	30 - 150	16	30
52	2,2',5,5'-tetrachlorobiphenyl	0.100	0.085	85	30 - 150	0.072	72	30 - 150	17	30
66	2,3',4,4'-tetrachlorobiphenyl	0.100	0.084	84	30 - 150	0.069	69	30 - 150	19	30
77	3,3',4,4'-tetrachlorobiphenyl	0.100	0.085	85	30 - 150	0.068	68	30 - 150	22	30
87	2,2',3,4,5'-pentachlorobiphenyl	0.100	0.073	73	30 - 150	0.061	61	30 - 150	17	30
101	2,2',4,5,5'-pentachlorobiphenyl	0.100	0.086	86	30 - 150	0.071	71	30 - 150	19	30
105	2,3,3',4,4'-pentachlorobiphenyl	0.100	0.082	82	30 - 150	0.068	68	30 - 150	19	30
118	2,3',4,4',5-pentachlorobiphenyl	0.100	0.082	82	30 - 150	0.067	67	30 - 150	20	30
126	3,3',4,4',5-pentachlorobiphenyl	0.100	0.093	93	30 - 150	0.082	82	30 - 150	14	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.100	0.087	87	30 - 150	0.078	78	30 - 150	10	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.100	0.086	86	30 - 150	0.075	75	30 - 150	13	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.100	0.080	80	30 - 150	0.067	67	30 - 150	17	30
156	2,3,3',4,4',5-hexachlorobiphenyl				30 - 150			30 - 150		30
169	3,3',4,4',5,5'-hexachlorobiphenyl				30 - 150			30 - 150		30
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.100	0.088	88	30 - 150	0.082	82	30 - 150	7	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.100	0.081	81	30 - 150	0.074	74	30 - 150	9	30
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.100	0.075	74	30 - 150	0.066	66	30 - 150	13	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.100	0.068	68	30 - 150	0.058	58	30 - 150	16	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.100	0.089	89	30 - 150	0.077	77	30 - 150	14	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.100	0.082	82	30 - 150	0.077	77	30 - 150	6	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.100	0.081	80	30 - 150	0.074	74	30 - 150	8	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.100	0.080	80	30 - 150	0.074	74	30 - 150	8	30

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
198 2,2',3,3',4,4',5,5',6-octachlorobiphenyl	117	30 - 150	111	30 - 150

Lab Number: 29522-244MSD
Sample Designation: Composite 7 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/25/17 1200
Date Extracted: 08/25/17 1200
Date Analyzed: 09/07/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 0.50
Dilution Factor: 1.00

Congener Number	PCB Congener	Sample Result (ug/L)	Amount Added (ug/L)	MS Result (ug/L)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	0.014	0.106	0.083	65	30 - 150	0.081	63	30 - 150	3	30
18	2,2',5-trichlorobiphenyl	0.006	0.106	0.096	85	30 - 150	0.092	81	30 - 150	4	30
28	2,4,4'-trichlorobiphenyl	0.024	0.106	0.106	76	30 - 150	0.110	85	30 - 150	8	30
44	2,2',3,5'-tetrachlorobiphenyl	0.022	0.106	0.113	86	30 - 150	0.110	86	30 - 150	0	30
49	2,2',4,5'-tetrachlorobiphenyl	0.022	0.106	0.099	72	30 - 150	0.092	66	30 - 150	6	30
52	2,2',5,5'-tetrachlorobiphenyl	0.041	0.106	0.147	100	30 - 150	0.150	99	30 - 150	1	30
66	2,3',4,4'-tetrachlorobiphenyl	0.022	0.106	0.115	87	30 - 150	0.097	71	30 - 150	16	30
77	3,3',4,4'-tetrachlorobiphenyl	ND	0.106	0.092	86	30 - 150	0.076	72	30 - 150	18	30
87	2,2',3,4,5'-pentachlorobiphenyl	0.010	0.106	0.081	67	30 - 150	0.079	65	30 - 150	2	30
101	2,2',4,5,5'-pentachlorobiphenyl	0.028	0.106	0.116	83	30 - 150	0.110	79	30 - 150	4	30
105	2,3,3',4,4'-pentachlorobiphenyl	0.006	0.106	0.087	76	30 - 150	0.080	69	30 - 150	9	30
118	2,3',4,4',5-pentachlorobiphenyl	0.020	0.106	0.102	78	30 - 150	0.100	77	30 - 150	1	30
126	3,3',4,4',5-pentachlorobiphenyl	ND	0.106	0.075	71	30 - 150	0.084	79	30 - 150	11	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.002	0.106	0.086	79	30 - 150	0.088	81	30 - 150	2	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.020	0.106	0.106	80	30 - 150	0.120	89	30 - 150	9	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.020	0.106	0.104	79	30 - 150	0.097	73	30 - 150	7	30
156	2,3,3',4,4',5-hexachlorobiphenyl										
169	3,3',4,4',5,5'-hexachlorobiphenyl										
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.006	0.106	0.090	79	30 - 150	0.098	86	30 - 150	9	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.011	0.106	0.100	84	30 - 150	0.100	85	30 - 150	2	30
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.004	0.106	0.072	64	30 - 150	0.075	67	30 - 150	4	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	ND	0.106	0.064	60	30 - 150	0.059	56	30 - 150	7	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.007	0.106	0.087	75	30 - 150	0.093	81	30 - 150	7	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.001	0.106	0.073	68	30 - 150	0.072	67	30 - 150	1	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.002	0.106	0.063	58	30 - 150	0.062	56	30 - 150	2	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.001	0.106	0.058	54	30 - 150	0.055	52	30 - 150	4	30

Surrogate Standard	MS Recovery (%)	Advisory Limits (%)	MSD Recovery (%)	Advisory Limits (%)
PCB 198	100	30 - 150	94	30 - 150

Lab Number:	Method Detection Limit Study 2017W
Sample Designation:	Water MDL Study
Date Sampled:	03/17/2017
Date Extracted:	03/17/2017
Date Analyzed:	04/10/2017
Matrix:	Water
Sample Amount (mL):	1000
Final Volume (mL)	1
Dilution Factor:	1

Congener Number	PCB Congener	Reference Value (ug/L)	Replicate 1 (ug/L)	Replicate 2 (ug/L)	Replicate 3 (ug/L)	Replicate 4 (ug/L)	Replicate 5 (ug/L)	Replicate 6 (ug/L)	Replicate 7 (ug/L)	MDL (ug/L)
8	2,4'-Dichlorobiphenyl	0.0008	0.0047	0.0048	0.0049	0.0048	0.0053	0.0052	0.0053	0.0008
18	2,2',5'-Trichlorobiphenyl	0.0008	0.0050	0.0044	0.0045	0.0045	0.0049	0.0051	0.0047	0.0008
28	2,4,4'-Trichlorobiphenyl	0.0008	0.0055	0.0058	0.0061	0.0059	0.0063	0.0061	0.0063	0.0009
52	2,2',5,5'-Tetrachlorobiphenyl	0.0008	0.0057	0.0061	0.0060	0.0058	0.0063	0.0065	0.0065	0.0010
49	2,2',4,5'-Tetrachlorobiphenyl	0.0008	0.0057	0.0059	0.0051	0.0055	0.0063	0.0058	0.0060	0.0012
44	2,2',3,5'-Tetrachlorobiphenyl	0.0008	0.0058	0.0060	0.0058	0.0055	0.0063	0.0061	0.0060	0.0007
66	2,3',4,4'-Tetrachlorobiphenyl	0.0008	0.0067	0.0067	0.0061	0.0065	0.0069	0.0065	0.0068	0.0008
101	2,2',4,5,5'-Pentachlorobiphenyl	0.0008	0.0070	0.0073	0.0065	0.0065	0.0071	0.0064	0.0073	0.0011
87	2,2',3,4,5'-Pentachlorobiphenyl	0.0008	0.0074	0.0068	0.0065	0.0068	0.0071	0.0068	0.0074	0.0010
77	3,3',4,4'-Tetrachlorobiphenyl	0.0008	0.0070	0.0064	0.0069	0.0068	0.0071	0.0071	0.0067	0.0007
118	2,3',4,4',5'-Pentachlorobiphenyl	0.0008	0.0068	0.0065	0.0067	0.0069	0.0070	0.0070	0.0069	0.0005
184	2,2',3,4,4',6,6'-Heptachlorobiphenyl	0.0008	0.0070	0.0064	0.0064	0.0068	0.0068	0.0069	0.0069	0.0007
153	2,2',4,4',5,5'-Hexachlorobiphenyl	0.0008	0.0072	0.0070	0.0076	0.0071	0.0071	0.0069	0.0065	0.0010
105	2,3,3',4,4'-Pentachlorobiphenyl	0.0008	0.0070	0.0065	0.0068	0.0070	0.0072	0.0071	0.0069	0.0007
138	2,2',3,4,4',5'-Hexachlorobiphenyl	0.0008	0.0073	0.0075	0.0073	0.0077	0.0076	0.0070	0.0074	0.0006
126	3,3',4,4',5'-Pentachlorobiphenyl	0.0008	0.0067	0.0070	0.0077	0.0064	0.0069	0.0068	0.0070	0.0012
187	2,2',3,4',5,5',6-Heptachlorobiphenyl	0.0008	0.0072	0.0066	0.0067	0.0069	0.0068	0.0068	0.0066	0.0006
183	2,2',3,4,4',5',6-Heptachlorobiphenyl	0.0008	0.0071	0.0068	0.0071	0.0076	0.0072	0.0072	0.0072	0.0007
128	2,2',3,3',4,4'-Hexachlorobiphenyl	0.0008	0.0066	0.0073	0.0072	0.0070	0.0072	0.0068	0.0068	0.0008
156	2,3,3',4,4',5'-Hexachlorobiphenyl									
180	2,2',3,4,4',5,5'-Heptachlorobiphenyl	0.0008	0.0064	0.0073	0.0076	0.0073	0.0070	0.0073	0.0068	0.0012
169	3,3',4,4',5,5'-Hexachlorobiphenyl									
170	2,2',3,3',4,4',5-Heptachlorobiphenyl	0.0008	0.0077	0.0076	0.0079	0.0085	0.0078	0.0076	0.0077	0.0009
195	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0.0008	0.0055	0.0055	0.0054	0.0060	0.0053	0.0052	0.0048	0.0011
206	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	0.0008	0.0079	0.0077	0.0080	0.0076	0.0082	0.0084	0.0082	0.0009
209	Decachlorobiphenyl	0.0008	0.0059	0.0064	0.0066	0.0067	0.0064	0.0062	0.0062	0.0008

Lab Number:	PB007W
Sample Designation:	Laboratory Blank
Date Sampled:	08/28/17 0800
Date Extracted:	08/28/17 0800
Date Analyzed:	08/30/17
Matrix:	Water
Sample Amount (mL):	1000.00
Final Volume (mL)	0.50
Dilution Factor:	1

Compound	Concentration (ug/L)	Qualifier
pentachlorophenol	1	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	72	30 - 150

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number: LCS007W / LCSD007W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/28/17 0800
Date Extracted: 08/28/17 0800
Date Analyzed: 08/29/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL) 0.50
Dilution Factor: 1

Compound	True Value (ug/L)	LCS Result (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
pentachlorophenol	10.0	7.9	79	30 - 150	7.4	74	30 - 150	7	30

Surrogate Standards	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	83	30 - 150	68	30 - 150

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number:	SRM007W
Sample Designation:	Standard Reference Material
Date Sampled:	08/28/17 0800
Date Extracted:	08/28/17 0800
Date Analyzed:	08/30/17
Matrix:	Water
Sample Amount (mL):	1000.00
Final Volume (mL)	0.50
Dilution Factor:	1

Compound	Concentration (ug/L)	True Value (ug/L)	Recovery (%)	Limit (%)
pentachlorophenol	7.1	9.9	72	30 - 150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	87	30 - 150

ESI

Lab Number: 29522-097MSD
Sample Designation: Composite 3 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/28/17 0800
Date Extracted: 08/28/17 0800
Date Analyzed: 08/31/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 0.50
Dilution Factor: 1

Compound	Sample Result (ug/L)	Amount Added (ug/L)	MS Result (ug/L)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
pentachlorophenol	U	10	8.3	83	30 - 150	10.5	105	30 - 150	23	30

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	100	30 - 150	110	30 - 150

ESI

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number:	PB008W
Sample Designation:	Laboratory Blank
Date Sampled:	08/29/17 1200
Date Extracted:	08/29/17 1200
Date Analyzed:	08/31/17
Matrix:	Water
Sample Amount (mL):	1000.00
Final Volume (mL)	0.50
Dilution Factor:	1

Compound	Concentration (ug/L)	Qualifier
pentachlorophenol	1	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	95	30 - 150

ESI

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number: LCS008W / LCSD008W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/29/17 1200
Date Extracted: 08/29/17 1200
Date Analyzed: 08/31/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL): 0.50
Dilution Factor: 1

Compound	True Value (ug/L)	LCS Result (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
pentachlorophenol	10.0	7.4	74	30 - 150	8.0	80	30 - 150	7	30

Surrogate Standards	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	64	30 - 150	69	30 - 150

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number:	SRM008W
Sample Designation:	Standard Reference Material
Date Sampled:	08/29/17 1200
Date Extracted:	08/29/17 1200
Date Analyzed:	08/31/17
Matrix:	Water
Sample Amount (mL):	1000.00
Final Volume (mL)	0.50
Dilution Factor:	1

Compound	Concentration (ug/L)	True Value (ug/L)	Recovery (%)	Limit (%)
pentachlorophenol	6.3	9.9	64	30 - 150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	74	30 - 150

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Lab Number: 29522-241MSD
Sample Designation: Composite 7 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/29/17 1200
Date Extracted: 08/29/17 1200
Date Analyzed: 08/31/17
Matrix: Water
Sample Amount (mL): 940
Final Volume (mL): 0.50
Dilution Factor: 1

Compound	Sample Result (ug/L)	Amount Added (ug/L)	MS Result (ug/L)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
pentachlorophenol	U	10.6	6.7	63	30 - 150	6.4	64	30 - 150	5	30

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
2,4,6-tribromophenol	85	30 - 150	75	30 - 150

ESI

Semivolatile Organics in Water
SW 846 8270/EPA 680 modified

Sample Designation: MDLW989W
Date Sampled: 06/20/2017
Date Prepared: 06/20/2017
Date Analyzed: 07/31/2017
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL) 1.00
Dilution Factor: 1

Compound	Reference Value (ug/L)	Replicate 1 (ug/L)	Replicate 2 (ug/L)	Replicate 3 (ug/L)	Replicate 4 (ug/L)	Replicate 5 (ug/L)	Replicate 6 (ug/L)	Replicate 7 (ug/L)	Calcd MDL (ug/L)
pentachlorophenol	2.5	2.13	2.19	2.2	2.14	2.11	2.28	2.09	0.19

Pesticides in Water
SW 846 8081B

Lab Number: PB003W
Sample Designation: Laboratory Blank
Date Sampled: 08/23/17 0930
Date Extracted: 08/23/17 0930
Date Analyzed: 08/29/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL): 1
Dilution Factor: 1

Analyte	Concentration (ug/L)	Qualifier
aldrin	0.002	U
gamma-chlordane (cis)	0.002	U
alpha-chlordane (trans)	0.002	U
chlorpyrifos	0.002	U
dieldrin	0.004	U
4,4'-DDT	0.004	U
endosulfan I	0.002	U
endosulfan II	0.004	U
endrin	0.004	U
heptachlor	0.002	U
heptachlor epoxide	0.002	U
gamma-BHC (lindane)	0.002	U
toxaphene	0.1	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	85	30 - 150
decachlorobiphenyl	87	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Water
SW 846 8081B

Lab Number: LCS003W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/23/17 0930
Date Extracted: 08/23/17 0930
Date Analyzed: 08/29/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL): 1
Dilution Factor:

Analyte	True Value (ug/L)	LCS Concentration (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Concentration (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference	RPD Limit
aldrin	0.01	0.006	60	30-150	0.006	57	30-150	5	30
gamma-chlordane (cis)	0.01	0.008	75	30-150	0.008	69	30-150	9	30
alpha-chlordane (trans)	0.01	0.006	60	30-150	0.006	59	30-150	2	30
chlorpyrifos	0.01	0.007	74	30-150	0.008	80	30-150	8	30
dieldrin	0.02	0.013	63	30-150	0.012	61	30-150	3	30
4,4'-DDT	0.02	0.013	65	30-150	0.013	66	30-150	1	30
endosulfan I	0.01	0.006	58	30-150	0.006	60	30-150	2	30
endosulfan II	0.02	0.013	65	30-150	0.012	62	30-150	5	30
endrin	0.02	0.012	62	30-150	0.013	66	30-150	7	30
heptachlor	0.01	0.005	47	30-150	0.004	43	30-150	8	30
heptachlor epoxide	0.01	0.008	80	30-150	0.007	74	30-150	7	30
gamma-BHC (lindane)	0.01	0.009	91	30-150	0.010	103	30-150	12	30
toxaphene	NA	NA	NA	30-150	NA	NA	30-150	NA	30

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	101	98	30 - 150
decachlorobiphenyl	113	111	30 - 150

U = Not detected at indicated level.

NC = Not calculated due to one or both values less than five times quantitation limit.

ESI

Pesticides in Water
SW 846 8081B

Lab Number: SRM003W
Sample Designation: Standard Reference Material
Date Sampled: 08/23/17 0930
Date Extracted: 08/23/17 0930
Date Analyzed: 08/30/17
Matrix: Water
Initial Volume (mL): 1000
Final Volume (mL): 1
Dilution Factor: 1

Anayte	Concentration (ug/L)	True Value (ug/L)	Recovery (%)	Limit (%)
aldrin	0.029	0.037	79	30-150
gamma-chlordane	0.043	0.042	101	30-150
alpha-chlordane	0.016	0.018	89	30-150
cis-nonachlor	NA	NA	NA	30-150
trans-nonachlor	NA	NA	NA	30-150
oxychlordane	NA	NA	NA	30-150
4,4'-DDT	0.015	0.016	93	30-150
4,4'-DDE	0.029	0.036	80	30-150
4,4'-DDD	NA	NA	NA	30-150
alpha-BHC	0.031	0.033	95	30-150
dieldrin	0.046	0.053	87	30-150
endosulfan I	NA	NA	NA	30-150
endosulfan II	NA	NA	NA	30-150
endrin	0.011	0.014	80	30-150
heptachlor	0.025	0.034	73	30-150
heptachlor epoxide	0.027	0.023	117	30-150
hexachlorobenzene	NA	NA	NA	30-150
gamma-BHC (Lindane)	0.065	0.068	96	30-150
methoxychlor	0.04	0.039	103	30-150
toxaphene	NA	NA	NA	30-150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	75	30 - 150
decachlorobiphenyl	119	30 - 150

NA = No reference value available

ESI

Pesticides in Water
SW 846 8081B

Lab Number: 29522-106
Sample Designation: Composite 3 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/23/17 0930
Date Extracted: 08/23/17 0930
Date Analyzed: 08/30/17
Matrix: Water
Sample Amount (mL): 940.00
Final Volume (mL): 1
Dilution Factor: 1

Analyte	Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	MS Recovery (%)	Limit (%)	MSD Concentration (ug/L)	MSD Recovery (%)	Limit (%)	Relative Diff (%)	Limit (%)
aldrin	0.01	U	0.006	59	30-150	0.007	59	30-150	10	30
gamma-chlordane (cis)	0.01	U	0.006	64	30-150	0.007	65	30-150	10	30
alpha-chlordane (trans)	0.01	U	0.007	72	30-150	0.009	83	30-150	23	30
chlorpyrifos	0.01	0.003	0.013	96	30-150	0.010	64	30-150	22	30
dieldrin	0.02	U	0.021	103	30-150	0.018	83	30-150	12	30
4,4'-DDT	0.02	U	0.013	65	30-150	0.015	67	30-150	13	30
endosulfan I	0.01	U	0.008	76	30-150	0.008	73	30-150	6	30
endosulfan II	0.02	U	0.014	68	30-150	0.015	70	30-150	13	30
endrin	0.02	U	0.020	100	30-150	0.018	81	30-150	12	30
heptachlor	0.01	U	0.005	49	30-150	0.005	49	30-150	9	30
heptachlor epoxide	0.01	U	0.009	91	30-150	0.009	83	30-150	1	30
gamma-BHC (lindane)	0.01	U	0.006	57	30-150	0.006	59	30-150	12	30
toxaphene	NA	U	U	NA	30-150	U	NA	30-150	NA	30

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	128	30 - 150	92	30 - 150
decachlorobiphenyl	122	30 - 150	126	30 - 150

U = Not detected at indicated level.
NA = Not added or evaluated.

ESI

Pesticides in Water
SW 846 8081B

Lab Number: PB004W
Sample Designation: Laboratory Blank
Date Sampled: 08/24/17 0830
Date Extracted: 08/24/17 0830
Date Analyzed: 08/29/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL) 1
Dilution Factor: 1

Analyte	Concentration (ug/L)	Qualifier
aldrin	0.002	U
gamma-chlordane (cis)	0.002	U
alpha-chlordane (trans)	0.002	U
chlorpyrifos	0.002	U
dieldrin	0.004	U
4,4'-DDT	0.004	U
endosulfan I	0.002	U
endosulfan II	0.004	U
endrin	0.004	U
heptachlor	0.002	U
heptachlor epoxide	0.002	U
gamma-BHC (lindane)	0.002	U
toxaphene	0.1	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	85	30 - 150
decachlorobiphenyl	87	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Water
SW 846 8081B

Lab Number: LCS004W
Sample Designation: Laboratory Control Sample Duplicate
Date Sampled: 08/24/17 0830
Date Extracted: 08/24/17 0830
Date Analyzed: 08/30/17
Matrix: Water
Sample Amount (mL): 1000
Final Volume (mL): 1
Dilution Factor:

Analyte	True Value (ug/L)	LCS Concentration (ug/L)	Recovery (%)	Recovery Limit (%)	LCSD Concentration (ug/L)	Recovery (%)	Recovery Limit (%)	Relative Difference	RPD Limit
aldrin	0.01	0.008	78	30-150	0.009	88	30-150	11	30
gamma-chlordane (cis)	0.01	0.007	70	30-150	0.007	88	30-150	24	30
alpha-chlordane (trans)	0.01	0.010	102	30-150	0.010	89	30-150	13	30
chlorpyrifos	0.01	0.012	115	30-150	0.009	93	30-150	21	30
dieldrin	0.02	0.019	93	30-150	0.021	105	30-150	12	30
4,4'-DDT	0.02	0.016	80	30-150	0.014	72	30-150	11	30
endosulfan I	0.01	0.008	78	30-150	0.007	69	30-150	13	30
endosulfan II	0.02	0.015	76	30-150	0.019	93	30-150	20	30
endrin	0.02	0.017	85	30-150	0.013	66	30-150	25	30
heptachlor	0.01	0.007	72	30-150	0.007	74	30-150	2	30
heptachlor epoxide	0.01	0.012	119	30-150	0.009	90	30-150	28	30
gamma-BHC (lindane)	0.01	0.006	60	30-150	0.007	70	30-150	16	30
toxaphene	NA	NA	NA	30-150	NA	NA	30-150	NA	30

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	91	98	30 - 150
decachlorobiphenyl	97	111	30 - 150

U = Not detected at indicated level.

NC = Not calculated due to one or both values less than five times quantitation limit.

ESI

Pesticides in Water
SW 846 8081B

Lab Number: SRM004W
Sample Designation: Standard Reference Material
Date Sampled: 08/24/17 0830
Date Extracted: 08/24/17 0830
Date Analyzed: 08/30/17
Matrix: Water
Initial Volume (mL): 1000
Final Volume (mL): 1
Dilution Factor: 1

Analyte	Concentration (ug/L)	True Value (ug/L)	Recovery (%)	Limit (%)
aldrin	0.039	0.037	106	30-150
gamma-chlordane	0.051	0.042	121	30-150
alpha-chlordane	0.016	0.018	89	30-150
cis-nonachlor	NA	NA	NA	30-150
trans-nonachlor	NA	NA	NA	30-150
oxychlordane	NA	NA	NA	30-150
4,4'-DDT	0.016	0.016	102	30-150
4,4'-DDE	0.035	0.036	97	30-150
4,4'-DDD	NA	NA	NA	30-150
alpha-BHC	0.034	0.033	106	30-150
dieldrin	0.051	0.053	97	30-150
endosulfan I	NA	NA	NA	30-150
endosulfan II	NA	NA	NA	30-150
endrin	0.011	0.014	78	30-150
heptachlor	0.032	0.034	93	30-150
heptachlor epoxide	0.032	0.023	137	30-150
hexachlorobenzene	NA	NA	NA	30-150
gamma-BHC (Lindane)	0.075	0.068	111	30-150
methoxychlor	0.039	0.039	99	30-150
toxaphene	NA	NA	NA	30-150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	95	30 - 150
decachlorobiphenyl	108	30 - 150

NA = No reference value available

ESI

Pesticides in Water
SW 846 8081B

Lab Number: 29522-250
Sample Designation: Composite 7 Elutriate - Rep 1 (Matrix Spike Duplicate)
Date Sampled: 08/24/17 0830
Date Extracted: 08/24/17 0830
Date Analyzed: 08/30/17
Matrix: Water
Sample Amount (mL): 940.00
Final Volume (mL): 1
Dilution Factor: 1

Analyte	Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	MS Recovery (%)	Limit (%)	MSD Concentration (ug/L)	MSD Recovery (%)	Limit (%)	Relative Diff (%)	Limit (%)	Qual
aldrin	0.01	U	0.007	75	30-150	0.010	95	30-150	34	30	J7
gamma-chlordane (cis)	0.01	U	0.012	117	30-150	0.013	123	30-150	14	30	
alpha-chlordane (trans)	0.01	U	0.014	135	30-150	0.011	97	30-150	23	30	
chlorpyrifos	0.01	U	0.008	80	30-150	0.009	80	30-150	9	30	
dieldrin	0.02	U	0.020	98	30-150	0.026	123	30-150	28	30	
4,4'-DDT	0.02	U	0.013	64	30-150	0.010	49	30-150	21	30	
endosulfan I	0.01	U	0.006	62	30-150	0.007	68	30-150	19	30	
endosulfan II	0.02	U	0.010	49	30-150	0.009	44	30-150	5	30	
endrin	0.02	U	0.021	106	30-150	0.024	115	30-150	13	30	
heptachlor	0.01	U	0.005	50	30-150	0.006	58	30-150	24	30	
heptachlor epoxide	0.01	U	0.005	50	30-150	0.005	49	30-150	7	30	
gamma-BHC (lindane)	0.01	U	0.008	82	30-150	0.009	85	30-150	13	30	
toxaphene	NA	U	U	NA	30-150	U	NA	30-150	NA	30	

Surrogate Standard	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	62	30 - 150	53	30 - 150
decachlorobiphenyl	77	30 - 150	67	30 - 150

U = Not detected at indicated level.
NA = Not added or evaluated.
J7 = MSD %RR above limit.

ESI

Lab Number:	MDLW A 2017	MDLW B 2017	MDLW C 2017	MDLW D 2017	MDLW E 2017	MDLW F 2017	MDLW G 2017	
Sample Designation:	Water	Water	Water	Water	Water	Water	Water	
Date Sampled:	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	
Date Extracted:	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	03/10/17 1200	
Date Analyzed:	03/16/17	03/16/17	03/16/17	03/16/17	03/16/17	03/16/17	03/16/17	
Matrix:	Water	Water	Water	Water	Water	Water	Water	
Moisture:	NA	NA	NA	NA	NA	NA	NA	
Sample Amount (mL):	1000	1000	1000	1000	1000	1000	1000	
Final Volume (mL)	1	1	1	1	1	1	1	
Dilution Factor:	1	1	1	1	1	1	1	
True Value (ug/L)	MDL01 Found (ug/L)	MDL02 Found (ug/L)	MDL03 Found (ug/L)	MDL04 Found (ug/L)	MDL05 Found (ug/L)	MDL06 Found (ug/L)	MDL07 Found (ug/L)	STD (ug/L)
hexachlorobenzene	0.0023	0.0006	0.0036	0.0042	0.0055	0.0035	0.0033	0.001
alpha-BHC	0.0023	0.0015	0.0024	0.0026	0.0028	0.0024	0.0027	0.00041
gamma-BHC (Lindane)	0.0027	0.0023	0.0032	0.0031	0.0032	0.0028	0.0033	0.00032
beta-BHC	0.0044	0.0036	0.0049	0.0050	0.0056	0.0051	0.0052	0.00060
delta-BHC	0.0021	0.0017	0.0023	0.0023	0.0022	0.0027	0.0025	0.00034
heptachlor	0.0017	0.0020	0.0021	0.0022	0.0021	0.0020	0.0022	0.00016
aldrin	0.0021	0.0019	0.0026	0.0026	0.0025	0.0026	0.0026	0.00028
oxychlorodane	0.0030	0.0021	0.0034	0.0036	0.0027	0.0033	0.0032	0.00046
chlorpyrifos	0.0028	0.0021	0.0033	0.0031	0.0031	0.0034	0.0035	0.00045
heptachlor epoxide	0.0029	0.0022	0.0035	0.0037	0.0031	0.0034	0.0033	0.00045
gamma-chlordane	0.0033	0.0030	0.0036	0.0039	0.0036	0.0036	0.0036	0.00027
trans-nonachlor	0.0032	0.0029	0.0042	0.0045	0.0041	0.0026	0.0027	0.00071
alpha-chlordane	0.0027	0.0025	0.0031	0.0039	0.0032	0.0035	0.0034	0.00044
endosulfan I	0.0020	0.0017	0.0028	0.0027	0.0026	0.0025	0.0027	0.00037
4,4'-DDE	0.0055	0.0056	0.0064	0.0066	0.0063	0.0066	0.0067	0.00046
dieldrin	0.0053	0.0045	0.0059	0.0066	0.0065	0.0054	0.0063	0.00071
endrin	0.0053	0.0047	0.0058	0.0061	0.0057	0.0056	0.0061	0.00047
cis-nonachlor	0.0024	0.0025	0.0028	0.0032	0.0028	0.0027	0.0030	0.00024
4,4'-DDD	0.0051	0.0050	0.0056	0.0056	0.0054	0.0053	0.0059	0.00031
endosulfan II	0.0064	0.0058	0.0068	0.0066	0.0062	0.0067	0.0067	0.00033
toxaphene	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4,4'-DDT	0.0062	0.0068	0.0066	0.0071	0.0065	0.0062	0.0070	0.00033
endrin aldehyde	0.0051	0.0052	0.0058	0.0061	0.0057	0.0060	0.0059	0.00035
endosulfan sulfate	0.0052	0.0053	0.0055	0.0056	0.0059	0.0057	0.0054	0.00023
methoxychlor	0.0258	0.0289	0.0291	0.0298	0.0298	0.0266	0.0298	0.00154
endrin ketone	0.0059	0.0057	0.0062	0.0061	0.0062	0.0066	0.0063	0.00025
102 of 155	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	(%)
Surrogate Standard	49	1	79	73	71	66	70	30 - 150
tetrachloro-m-xylene	83	81	103	83	81	80	81	30 - 150
decachlorobiphenyl								

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	Yes
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	Yes, with one noted exception.
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	Yes
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	Yes, with four noted exception.
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	NA
22. Were the test-specific age requirements met for each test species?	NA
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	NA
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	NA
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	NA

Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ((15 % D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-3: Quality Control Summary for Analyses of Pesticides in Sediment, Tissue and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (< 20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ((15 % D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	Aldrin MSD %RPD was above the limit.	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	Tetrachloro-m-xylene surrogate recovery was below the limit for Composite 8 Elutriate - Rep 2. Decachlorobiphenyl surrogate was low for CLDS Ref Site Bank Rep 1, 2, and 3.	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB congeners) in Sediment, Tissue and Water Matrices

Method Reference Number: 8082A

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration. (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	NA		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	Yes		Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ± 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue and Water Matrices


Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift (\pm 15 % D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC 
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-Z	29516-001	S	Hold:Composite	2x5 Gal.	4C	
NHH-Z	29516-002	S	Hold:Composite	4x5 Gal.	4C	
NHH-P	29516-003	S	Hold:Composite	1x5 Gal.	4C	
NHH-P	29516-004	S	Hold:Composite	2x5 Gal.	4C	
NHH-L	29516-005	S	Hold:Composite	1x5 Gal.	4C	
NHH-L	29516-006	S	Hold:Composite	1x5 Gal.	4C	
NHH-J	29516-007	S	Hold:Composite	2x5 Gal.	4C	
NHH-J	29516-008	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-009	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-010	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-011	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-012	S	Hold:Composite	1x5 Gal.	4C	
NHH-B	29516-013	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-014	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-015	S	Hold:Composite	1x5 Gal.	4C	
NHH-O	29516-016	S	Hold:Composite	2x5 Gal.	4C	
NHH-O	29516-017	S	Hold:Composite	1x5 Gal.	4C	
NHH-Y	29516-018	S	Hold:Composite	2x5 Gal.	4C	
NHH-Y	29516-019	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-020	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-021	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-022	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-023	S	Hold:Composite	1x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *u*
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-N	29516-024	S	Hold:Composite	1x5 Gal.	4C	
NHH-N	29516-025	S	Hold:Composite	1x5 Gal.	4C	
NHH-A	29516-026	S	Hold:Composite	1x5 Gal.	4C	
NHH-C	29516-027	S	Hold:Composite	5x5 Gal.	4C	
NHH-C	29516-028	S	Hold:Composite	2x5 Gal.	4C	
NHH-D	29516-029	S	Hold:Composite	1x5 Gal.	4C	
NHH-D	29516-030	S	Hold:Composite	2x5 Gal.	4C	
NHH-T	29516-031	S	Hold:Composite	1x5 Gal.	4C	
NHH-T	29516-032	S	Hold:Composite	3x5 Gal.	4C	
NHH-E	29516-033	S	Hold:Composite	2x5 Gal.	4C	
NHH-E	29516-034	S	Hold:Composite	2x5 Gal.	4C	
NHH-S	29516-035	S	Hold:Composite	1x5 Gal.	4C	
NHH-S	29516-036	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-037	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-038	S	Hold:Composite	2x5 Gal.	4C	
NHH-H	29516-039	S	Hold:Composite	3x5 Gal.	4C	
NHH-H	29516-040	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-041	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-042	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-043	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-044	S	Hold:Composite	1x5 Gal.	4C	
NHH-X	29516-045	S	Hold:Composite	2x5 Gal.	4C	
NHH-X	29516-046	S	Hold:Composite	2x5 Gal.	4C	

Notes and qualifications: 29516-024 S Hold:Composite

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 3 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *[Signature]*

Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes *

Does the info on the COC match the samples? Yes *
Were samples received within holding time? Yes
Were all samples properly labeled? Yes *
Were proper sample containers used? Yes
Were samples received intact? (none broken or leaking) Yes *
Were sample volumes sufficient for requested analysis? Yes *
Were VOC vials free of headspace? NA
pH Test strip ID number: _____

Sampled Date: Yes
Field ID complete: Yes
Sampled Time: Yes
Analysis request: Yes
COC Signed and dated: Yes
Were all samples received? Yes
Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
CLDS-Ref	29516-047 S		Hold:Composite	4x5 Gal.	4C	
NHC-I	29516-048 W		Hold:Composite	7x5 Gal.	4C	
NHC-V	29516-049 W		Hold:Composite	12x5 Gal.	4C	
NHC-F	29516-050 W		Hold:Composite	6x5 Gal.	4C	
CLDS-Ref-Top	29516-051 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Mid	29516-052 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Bottom	29516-053 W		Hold:Composite	2x5 Gal.	4C	
NHH-Q **	29516-054 S		Hold:Composite	4x5 Gal.	4C	
NHH-U **	29516-055 S		Hold:Composite	5x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

** Samples denoted on original chain of custody, not on revised documents discussed above.


New Haven Harbor Federal Navigation Project
USACE Contract No. W912WJ-17-D-003
October 2017

Client/Project Name:		Project Location:		Analysis Requested		Preservation	
USACE - VHH - FWP		New Haven Harbor				P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore	
Project Number:		Field Logbook No.:					
Sampler (Print Name)/(Affiliation):		Chain of Custody Tape Nos.:					
C. Steve Howe AECOM							
Signature:		TAT:					
<i>C. Steve Howe</i>							
Field Sample No./Identification		Date		Time		Remarks	
WHC-I		8/17/17		1430		7 carboys	
WHC-V		8/17/17		1528		12 carboys, 2 DI's	
WHC-F		8/17/17		1300		6 carboys	
CLDS-Ref-Top		8/17/17		1015		2 carboys	
CLDS-Ref-Mid						2 carboys	
CLDS-Ref-Bottom						2 carboys	
VHH-C		8/11		1033		7 buckets	
VHH-D		8/11		1507		CSH 3 buckets	
VHH-E		8/14		0832		4 buckets	
VHH-F		8/11		1650		3 buckets	
VHH-G		8/11		0837		2 buckets	
VHH-H		8/10		1548		4 buckets	
VHH-I		8/10		1627		3 buckets	
Relinquished by: (Print Name)/(Affiliation)		Date:		Time:		Analytical Laboratory (Destination):	
C. Steve Howe AECOM		8/16/17		1300		ESL	
Signature:		Received by: (Print Name)/(Affiliation)		Date:		Time:	
<i>C. Steve Howe</i>		James T. Ravencher		8/18/17		1300	
Relinquished by: (Print Name)/(Affiliation)		Signature:		Date:		Time:	
		<i>James T. Ravencher</i>					
Signature:		Received by: (Print Name)/(Affiliation)		Date:		Time:	
		<i>James T. Ravencher</i>					
Relinquished by: (Print Name)/(Affiliation)		Signature:		Date:		Time:	
		<i>James T. Ravencher</i>					
Signature:		Received by: (Print Name)/(Affiliation)		Date:		Time:	
		<i>James T. Ravencher</i>					
Sample Shipped Via:		Temp blank		Yes		No	
AECOM							

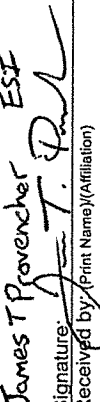
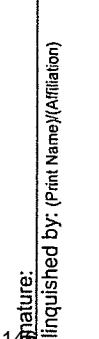

CHAIN OF CUSTODY RECORD

29516

Page 1 of 5

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested		Preservation				
Project Number:		Field Logbook No.:				1-HCl, 4° 2-H2SO4, 4° 3-Clear Glass 4-NaOH, 4° 5-NaOH/ZnAc, 4° 6-Na2S2O3, 4° 7-4°				
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:				Matrix Codes:				
Signature: 		Send Results/Report to:		TAT:		DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Lab I.D.	Remarks
NHH-Z	8/12	1350	X	X	5g bucket	SD 40C	NA	X		2 buckets
NHH-Z	8/18	1153	X	X				X		4 buckets
NHH-P	8/12	0850	X	X				X		1 bucket
NHH-P	8/19	1219	X	X				X		2 buckets
NHH-L	8/15	1405	X	X				X		1 bucket
NHH-L	8/10	1300	X	X				X		1 bucket
NHH-J	8/15	1405	X	X				X		2 buckets
NHH-J	8/10	1141	X	X				X		1 bucket
NHH-F	8/16	1658	X	X				X		1 bucket
NHH-F	8/11	1650	X	X				X		2 buckets
NHH-M	8/13	1220	X	X				X		2 buckets
NHH-M	8/18	1610	X	X				X		1 bucket
NHH-B	8/11	1157	X	X				X		1 bucket

Oredge Sediment Eval (OCE)


Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM	Date: 8/18/17	Time: 1300	Received by: (Print Name)/(Affiliation) James T Provencher EST	Date: 8/18/17	Time: 1300
Signature: 			Signature: 		
Relinquished by: (Print Name)/(Affiliation)			Received by: (Print Name)/(Affiliation)		
Signature: 			Signature: 		
Relinquished by: (Print Name)/(Affiliation)			Received by: (Print Name)/(Affiliation)		
Signature: 			Signature: 		
Relinquished by: (Print Name)/(Affiliation)			Received by: (Print Name)/(Affiliation)		

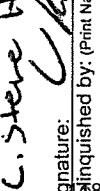
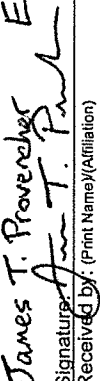
Sample Shipped Via: UPS FedEx Courier Other Yes No

Temp blank

COCs amended and revised on 8/21/17
C. Steve Howe AECOM
Rich King - EST 8/21/17

CHAIN OF CUSTODY RECORD

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven Harbor		Analysis Requested		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:		Field Logbook No.:				Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial E - Other	
Sampler (Print Name)/(Affiliation): C. Steve Hove AECOM		Chain of Custody Tape Nos.:				Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water	
Signature: 		Send Results/Report to:		TAT:		Lab I.D.	
Field Sample No./Identification		Date		Time		Remarks	
NHH-C	8/17/17	1213				5 buckets	
NHH-C	8/11/17	1333				2 buckets	
NHH-D	8/16	1443				1 bucket	
NHH-D	8/11	1507				2 buckets	
NHH-T	8/12	1220				1 bucket	
NHH-T	8/8	1731				3 buckets	
NHH-E	8/14	0832				2 buckets	
NHH-E	8/16	1230				2 buckets	
NHH-S	8/15	1158				1 bucket	
NHH-S	8/10	0955				1 bucket	
NHH-R	8/16	0829				1 bucket	
NHH-R	8/10	0832				2 buckets	

Relinquished by: (Print Name)/(Affiliation) C. Steve Hove AECOM		Received by: (Print Name)/(Affiliation) James T. Provencio ESI		Analytical Laboratory (Destination): COCs amended and revised 8/21/17	
Signature: 	Date: 8/18/17	Signature: 	Date: 8/18/17	Sample Shipped Via: UPS	
Relinquished by: (Print Name)/(Affiliation)	Time: 1700	Received by: (Print Name)/(Affiliation)	Time: 1300	Temp blank	
Signature:	Date:	Signature:	Date:	Yes	
Relinquished by: (Print Name)/(Affiliation)	Time:	Received by: (Print Name)/(Affiliation)	Time:	No	
Signature:	Date:	Signature:	Date:		

CHAIN OF CUSTODY RECORD

29516

Page 4 of 5

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested		Preservation Type 1 - HCl, 4" 2 - H2SO4, 4" 3 - HNO3, 4" 4 - NaOH, 4" 5 - NaOH/ZnAc, 4" 6 - Na2S2O3, 4" 7 - 4"	
Project Number:		Field Logbook No.:				Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:				Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Signature: <i>C. Steve Howe</i>		Send Results/Report to:		TAT:		Lab I.D.	
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.
NHH-H	8/10	1548	X	X	5g bucket SD	SD	4°C
NHH-H	8/16	1027	X	X			
NHH-I	8/10	1746	X	X			
NHH-I	8/17	1627	X	X			
NHH-V	8/19	1745	X	X			
NHH-V	8/15	1646	X	X			
NHH-X	8/18	1153	X	X	CS4		
NHH-X	8/18	0922	X	X	5g bucket SD	SD	4°C
NHH-X	8/12	1600	X	X			
CLOS-Ref	8/17	0800	X	X			
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Time: 1300		Received by: (Print Name)/(Affiliation) James T. Provencher ESI	
Signature: <i>C. Steve Howe</i>		Date:		Time:		Signature: <i>James T. Provencher</i>	
Relinquished by: (Print Name)/(Affiliation)		Date:		Time:		Received by: (Print Name)/(Affiliation)	
Signature:		Date:		Time:		Signature:	
Relinquished by: (Print Name)/(Affiliation)		Date:		Time:		Received by: (Print Name)/(Affiliation)	
Signature:		Date:		Time:		Signature:	

COCs amended and revised 8/21/17
Rich Long ESI - 8/21/17

Sample Shipped Via: UPS FedEx Courier Other Yes No

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 1
 Composite Lab ID.: 29517-001 Composite Final Volume: 22 gallons
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 0840
 Initials: BG/JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-C	29516-027	Solid		~25 gal/kg	~24.5 gal/kg	gray to black sediment with lots of shell hash
↓	↓ -028	↓	↓	↓	↓	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 2
 Composite Lab ID.: 29517-002 Composite Final Volume: 27.6 gal
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/11/17 1x1 gallon bucket
 Composite Prepared Time: 0750
 Initials: JKP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-D	29516-029	Solid	—	—	~10 gallons	
NHH-E	↓ -033	Solid	—	~7 gal	~7 gallons	
NHH-F	↓ -009	Solid	—	—	~10 gallons	
	010					

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 3
 Composite Lab ID.: 29517-003 Composite Final Volume: 31 gal
 Composite Matrix: Solid Composite Container(s): 6x5 gal/b buckets
 Composite Prepared Date: 08/21/17 1x1 gal/b buckets
 Composite Prepared Time: 1400
 Initials: W/ JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-G	29516-020 -021	Solid	—	—	~9.5 gal/b	
NHH-H	↓ -039 -040	Solid	—	—	~9 gal/b	
NHH-I	↓ -041 -042	Solid	—	—	~1 gal/b	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 4
 Composite Lab ID.: 29517-004 Composite Final Volume: 23 gallons
 Composite Matrix: Solid Composite Container(s): 505 gallon bucket
 Composite Prepared Date: 08/21/17 100 gallon bucket
 Composite Prepared Time: 1445
 Initials: BO/SJP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-J	29516- ⁰⁰⁷ ₀₀₈	Solid	—	—	~8 gallons	
NHH-K	↓ - ⁰²² ₀₂₃	Solid	—	—	~8 gallons	
NHH-L	↓ - ⁰⁰⁵ ₀₀₆	Solid	—	—	~9.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 5
 Composite Lab ID.: 29517-005 Composite Final Volume: ≈ 29 gallons
 Composite Matrix: Solid Composite Container(s): 6 x 5 gallon
 Composite Prepared Date: 08/21/17 1 x 1 gallon
 Composite Prepared Time: 1530
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-M	29516-011	Solid	—	—	≈ 9.5 g	
NHH-N	↓ -024	Solid	—	—	≈ 9 g	
NHH-O	↓ -016	Solid	—	—	≈ 10.5 g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 6
 Composite Lab ID.: 29517-006 Composite Final Volume: 28 gallons
 Composite Matrix: Solid Composite Container(s): 7x 5 gallon buckets
 Composite Prepared Date: 08/21/17 1x 1 gallon bucket
 Composite Prepared Time: 1205
 Initials: BSG / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-P	29516-003	Solid	—	—	~8.5 gallons	
NHH-Q	— 054	Solid	—	—	~14 gallons	
NHH-R	— 037	Solid	—	—	~7 gallons	
NHH-S	✓ - 035	Solid	—	—	~7 gallons	
	036					

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 7
 Composite Lab ID.: 29517-007 Composite Final Volume: 3/gallons
 Composite Matrix: Solid Composite Container(s): 7x5gallon buckets
 Composite Prepared Date: 08/21/17 1x1gallon bucket
 Composite Prepared Time: 1540
 Initials: BG/ JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-T	29516- ⁰³¹ ₀₃₂	Solid	—	—	~9.5gallons	
NHH-U	↓ -055	Solid	—	—	~14.5gallons	
NHH-V	- ⁰⁴³ ₀₄₄	Solid	—	—	~7gallons	
NHH-W	↓ - ⁰¹⁴ ₀₁₅	Solid	—	—	~7gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 8
 Composite Lab ID.: 29517-008 Composite Final Volume: ~26 gallons
 Composite Matrix: Solid Composite Container(s): 50 gallon buckets
 Composite Prepared Date: 08/21/17 10 gallon bucket
 Composite Prepared Time: 1130
 Initials: DB/ JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-X	29516-045 -046	Solid	—	—	~9.5gals	
NHH-Y	↓ -018 -019	Solid	—	—	~8.5gals	
NHH-Z	↓ -001 -002	Solid	—	—	~11.5gals	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Homogenization Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: CLDS Reference Site
 Composite Lab ID.: 29517-009 Composite Final Volume: ≈ 20 gallons
 Composite Matrix: Solid Composite Container(s): 4x5 gallons
 Composite Prepared Date: 08/21/17 1x1 gallon
 Composite Prepared Time: 1630
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-CLDS	29516-047	Solid	—	few shells	≈ 20g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation <u>Ⓢ JTP 08/25/17</u>
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite Reference Site Water
 Composite Lab ID.: 29517-010 Composite Final Volume: 30 gal
 Composite Matrix: Water Composite Container(s): 6x5 gal
 Composite Prepared Date: 08/21/17
 Composite Prepared Time: 1445
 Initials: DD
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
CLDS-Ref-Bottom	29516-001 ⁰⁵³	Water	—	—	10 gal	
CLDS-Ref-Mid	29516-003 ⁰⁵²	Water	—	—	10 gal	
CLDS-Ref-Top	29516-004 ⁰⁵¹	Water	—	—	10 gal	
	(E3) MR 9/5/17					

Subsamples Removed:

Lab Number	Sample Use
29521	Elutriate Preparation

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 1 Blank		Time Mixing Started <u>0835</u>
Amount of Sediment	<u>0</u> L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Amount of Overlying	<u>12</u> L	Time Mixing Stopped	<u>0905</u>
		Time Elutriate Siphoned Off	<u>1005</u>
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	<u>JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 1 Blank	29521-001	-	-	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 1		Time Mixing Started <u>1255</u>
Amount of Sediment	<u>9</u> L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Amount of Overlying	<u>36</u> L	Time Mixing Stopped	<u>1325</u>
		Time Elutriate Siphoned Off	<u>1425</u>
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	<u>JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 1	29521-002	Composite 1	29517-001	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 2	Time Mixing Started	<u>0925</u>
Amount of Sediment	<u>9</u> L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	<u>36</u> L	Time Mixing Stopped	<u>0935</u>
		Time Elutriate Siphoned Off	<u>1055</u>
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	<u>BG/JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 2	29521-004	Composite 2	29517-002	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

VOLUMES		TIMES	
Sample ID	Elutriate 3 Blank	Time Mixing Started	1140 0835
Amount of Sediment	0 12 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	12 48 L	Time Mixing Stopped	1210 0905
		Time Elutriate Siphoned Off	1310 1005
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	BG/JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 3 Blank	29521-005	-	-	NHC-I	29516-050 ⁴⁸

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 3	Time Mixing Started	1140
Amount of Sediment	12 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	48 L	Time Mixing Stopped	1210
		Time Elutriate Siphoned Off	1310
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 3	29521-006	Composite 3	29517-003	NHC-I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 18 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 4	Time Mixing Started	1042
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	1112
		Time Elutriate Siphoned Off	1212
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	BG/JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 4	29521-008	Composite 4	29517-004	NHC-F	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.

One Lafayette Road

P.O. Box 778

Hampton, N.H. 03843-0778

p 603.926.3345 • f 603.926.3521

envirosystems.com

Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID Elutriate 5 Time Mixing Started 0850

Amount of Sediment 9 L Hand Mixed Every 10 Minutes? Yes ☒ No

Amount of Overlying 36 L Time Mixing Stopped 0920

Time Elutriate Siphoned Off 1020

Centrifuged? ☒ Yes ☐ No

Preparer's Initials Bb/STP

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 5	29521-010	Composite 5	29517-005	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 18 L
29523	SPP Assays	~ 6 L

NOTES: _____

ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17	ESI Study: 29521	EnviroSystems, Inc. One Lafayette Road P.O. Box 778
Client: AECOM	Project: New Haven	Hampton, N.H. 03843-0778 p 603.926.3345 • f 603.926.3521 envirosystems.com

VOLUMES

TIMES

Sample ID	Elutriate 6	Time Mixing Started	0930
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	1000
		Time Elutriate Siphoned Off	1100
		Centrifuged?	<input checked="" type="radio"/> Yes No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 6	29521-012	Composite 6	29517-006	NAC-✓	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17	ESI Study: 29521	EnviroSystems, Inc. One Lafayette Road P.O. Box 778 Hampton, N.H. 03843-0778 p 603.926.3345 • f 603.926.3521 envirosystems.com
Client: AECOM	Project: New Haven	

VOLUMES		TIMES	
Sample ID	Elutriate 7 Blank	Time Mixing Started	0710
Amount of Sediment	0 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	12 L	Time Mixing Stopped	0740
		Time Elutriate Siphoned Off	0840
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	Bg/JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 7 Blank	29521-013	-	-	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L

NOTES: _____

ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17	ESI Study: 29521	EnviroSystems, Inc. One Lafayette Road P.O. Box 778 Hampton, N.H. 03843-0778 p 603.926.3345 • f 603.926.3521 envirosystems.com
Client: AECOM	Project: New Haven	

VOLUMES

TIMES

Sample ID	Elutriate 7	Time Mixing Started	0750
Amount of Sediment	12 L	Hand Mixed Every 10 Minutes?	Yes (No)
Amount of Overlying	48 L	Time Mixing Stopped	0820
		Time Elutriate Siphoned Off	0920
		Centrifuged?	(Yes) No
Preparer's Initials	BG/ JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 7	29521-014	Composite 7	29517-007	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778

Client: AECOM

Project: New Haven

Hampton, N.H. 03843-0778
p 603.926.3345 • f 603.926.3521
envirosystems.com

VOLUMES

TIMES

Sample ID	Elutriate 8	Time Mixing Started	1053
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	1123
		Time Elutriate Siphoned Off	1223
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 8	29521-016	Composite 8	29517-008	NHC-V	29516-049

Sub-samples Removed

JTP
08/23/17

Lab Code	Elutriate Use	Volume
----------	---------------	--------

29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID	Elutriate 1	Time Mixing Started	0800
Amount of Sediment	2 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Amount of Overlying	8 L	Time Mixing Stopped	0830
		Time Elutriate Siphoned Off	0930
Preparer's Initials	JTP	Centrifuged?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 1 Blank <input checked="" type="checkbox"/> MR 8/30/17	29521-017	Composite 1	29517-001	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES:

P:\General Projects\RPT-Active\DSE AECOM - New Haven Harbor FNP\Elutriate Prep.wpd

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES	
Sample ID	Elutriate 2		Time Mixing Started	<u>0905</u>
Amount of Sediment	<u>2</u> L		Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	<u>8</u> L		Time Mixing Stopped	<u>0935</u>
			Time Elutriate Siphoned Off	<u>1035</u>
			Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	<u>JTP</u>			

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 2	29521-018	Composite 2	29517-002	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 3	Time Mixing Started	<u>0905</u>
Amount of Sediment	<u>2</u> L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Amount of Overlying	<u>8</u> L	Time Mixing Stopped	<u>0935</u>
		Time Elutriate Siphoned Off	<u>1035</u>
		Centrifuged?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Preparer's Initials	<u>JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 3	29521-019	Composite 3	29517-003	NHC - I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 4	Time Mixing Started	0943
Amount of Sediment	2 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	8 L	Time Mixing Stopped	1013
		Time Elutriate Siphoned Off	1113
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 4	29521-020	Composite 4	29517-004	NHC-I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

VOLUMES		TIMES	
Sample ID	CLDS Ref Site Blank	Time Mixing Started	0800
Amount of Sediment	— L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="checkbox"/> No
Amount of Overlying	12 L	Time Mixing Stopped	0830
		Time Elutriate Siphoned Off	0930
		Centrifuged?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
CLDS Ref Site Blank	29521-021	-	-	Composite Reference Site Water	29517-010

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L

NOTES: _____

Tissue Chemistry Data



ANALYTICAL REPORT

Lab Number:	L1735126
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	11/10/17

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320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735126-01	MN NATIVE BACKGROUND REP A	TISSUE	NEW HAVEN, CT	09/28/17 16:00	09/29/17
L1735126-02	MN NATIVE BACKGROUND REP B	TISSUE	NEW HAVEN, CT	09/28/17 16:00	09/29/17
L1735126-03	MN NATIVE BACKGROUND REP C	TISSUE	NEW HAVEN, CT	09/28/17 16:00	09/29/17
L1735126-04	MN NATIVE BACKGROUND REP D	TISSUE	NEW HAVEN, CT	09/28/17 16:00	09/29/17
L1735126-05	MN NATIVE BACKGROUND REP E	TISSUE	NEW HAVEN, CT	09/28/17 16:00	09/29/17
L1735126-06	MN LABORATORY CONTROL REP A	TISSUE	NEW HAVEN, CT	09/28/17 16:30	09/29/17
L1735126-07	MN LABORATORY CONTROL REP B	TISSUE	NEW HAVEN, CT	09/28/17 16:30	09/29/17
L1735126-08	MN LABORATORY CONTROL REP C	TISSUE	NEW HAVEN, CT	09/28/17 16:30	09/29/17
L1735126-09	MN LABORATORY CONTROL REP D	TISSUE	NEW HAVEN, CT	09/28/17 16:30	09/29/17
L1735126-10	MN LABORATORY CONTROL REP E	TISSUE	NEW HAVEN, CT	09/28/17 16:30	09/29/17
L1735126-11	MN CLDS REFERENCE SEDIMENT REP A	TISSUE	NEW HAVEN, CT	09/29/17 08:00	09/29/17
L1735126-12	MN CLDS REFERENCE SEDIMENT REP B	TISSUE	NEW HAVEN, CT	09/29/17 08:00	09/29/17
L1735126-13	MN CLDS REFERENCE SEDIMENT REP C	TISSUE	NEW HAVEN, CT	09/29/17 08:00	09/29/17
L1735126-14	MN CLDS REFERENCE SEDIMENT REP D	TISSUE	NEW HAVEN, CT	09/29/17 08:00	09/29/17
L1735126-15	MN CLDS REFERENCE SEDIMENT REP E	TISSUE	NEW HAVEN, CT	09/29/17 08:00	09/29/17
L1735126-16	MN COMPOSITE 1 REP A	TISSUE	NEW HAVEN, CT	09/29/17 08:15	09/29/17
L1735126-17	MN COMPOSITE 1 REP B	TISSUE	NEW HAVEN, CT	09/29/17 08:15	09/29/17
L1735126-18	MN COMPOSITE 1 REP C	TISSUE	NEW HAVEN, CT	09/29/17 08:15	09/29/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735126-19	MN COMPOSITE 1 REP D	TISSUE	NEW HAVEN, CT	09/29/17 08:15	09/29/17
L1735126-20	MN COMPOSITE 1 REP E	TISSUE	NEW HAVEN, CT	09/29/17 08:15	09/29/17
L1735126-21	MN COMPOSITE 2 REP A	TISSUE	NEW HAVEN, CT	09/29/17 08:30	09/29/17
L1735126-22	MN COMPOSITE 2 REP B	TISSUE	NEW HAVEN, CT	09/29/17 08:30	09/29/17
L1735126-23	MN COMPOSITE 2 REP C	TISSUE	NEW HAVEN, CT	09/29/17 08:30	09/29/17
L1735126-24	MN COMPOSITE 2 REP D	TISSUE	NEW HAVEN, CT	09/29/17 08:30	09/29/17
L1735126-25	MN COMPOSITE 2 REP E	TISSUE	NEW HAVEN, CT	09/29/17 08:30	09/29/17
L1735126-26	MN COMPOSITE 3 REP A	TISSUE	NEW HAVEN, CT	09/29/17 08:45	09/29/17
L1735126-27	MN COMPOSITE 3 REP B	TISSUE	NEW HAVEN, CT	09/29/17 08:45	09/29/17
L1735126-28	MN COMPOSITE 3 REP C	TISSUE	NEW HAVEN, CT	09/29/17 08:45	09/29/17
L1735126-29	MN COMPOSITE 3 REP D	TISSUE	NEW HAVEN, CT	09/29/17 08:45	09/29/17
L1735126-30	MN COMPOSITE 3 REP E	TISSUE	NEW HAVEN, CT	09/29/17 08:45	09/29/17
L1735126-31	MN COMPOSITE 4 REP A	TISSUE	NEW HAVEN, CT	09/29/17 09:00	09/29/17
L1735126-32	MN COMPOSITE 4 REP B	TISSUE	NEW HAVEN, CT	09/29/17 09:00	09/29/17
L1735126-33	MN COMPOSITE 4 REP C	TISSUE	NEW HAVEN, CT	09/29/17 09:00	09/29/17
L1735126-34	MN COMPOSITE 4 REP D	TISSUE	NEW HAVEN, CT	09/29/17 09:00	09/29/17
L1735126-35	MN COMPOSITE 4 REP E	TISSUE	NEW HAVEN, CT	09/29/17 09:00	09/29/17
L1735126-36	MN COMPOSITE 5 REP A	TISSUE	NEW HAVEN, CT	09/29/17 09:30	09/29/17
L1735126-37	MN COMPOSITE 5 REP B	TISSUE	NEW HAVEN, CT	09/29/17 09:30	09/29/17
L1735126-38	MN COMPOSITE 5 REP C	TISSUE	NEW HAVEN, CT	09/29/17 09:30	09/29/17
L1735126-39	MN COMPOSITE 5 REP D	TISSUE	NEW HAVEN, CT	09/29/17 09:30	09/29/17
L1735126-40	MN COMPOSITE 5 REP E	TISSUE	NEW HAVEN, CT	09/29/17 09:30	09/29/17
L1735126-41	MN COMPOSITE 6 REP A	TISSUE	NEW HAVEN, CT	09/29/17 10:00	09/29/17
L1735126-42	MN COMPOSITE 6 REP B	TISSUE	NEW HAVEN, CT	09/29/17 10:00	09/29/17
L1735126-43	MN COMPOSITE 6 REP C	TISSUE	NEW HAVEN, CT	09/29/17 10:00	09/29/17
L1735126-44	MN COMPOSITE 6 REP D	TISSUE	NEW HAVEN, CT	09/29/17 10:00	09/29/17
L1735126-45	MN COMPOSITE 6 REP E	TISSUE	NEW HAVEN, CT	09/29/17 10:00	09/29/17
L1735126-46	MN COMPOSITE 7 REP A	TISSUE	NEW HAVEN, CT	09/29/17 10:15	09/29/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735126-47	MN COMPOSITE 7 REP B	TISSUE	NEW HAVEN, CT	09/29/17 10:15	09/29/17
L1735126-48	MN COMPOSITE 7 REP C	TISSUE	NEW HAVEN, CT	09/29/17 10:15	09/29/17
L1735126-49	MN COMPOSITE 7 REP D	TISSUE	NEW HAVEN, CT	09/29/17 10:15	09/29/17
L1735126-50	MN COMPOSITE 7 REP E	TISSUE	NEW HAVEN, CT	09/29/17 10:15	09/29/17
L1735126-51	MN COMPOSITE 8 REP A	TISSUE	NEW HAVEN, CT	09/29/17 11:00	09/29/17
L1735126-52	MN COMPOSITE 8 REP B	TISSUE	NEW HAVEN, CT	09/29/17 11:00	09/29/17
L1735126-53	MN COMPOSITE 8 REP C	TISSUE	NEW HAVEN, CT	09/29/17 11:00	09/29/17
L1735126-54	MN COMPOSITE 8 REP D	TISSUE	NEW HAVEN, CT	09/29/17 11:00	09/29/17
L1735126-55	MN COMPOSITE 8 REP E	TISSUE	NEW HAVEN, CT	09/29/17 11:00	09/29/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Case Narrative (continued)

Report Submission

November 10, 2017: This is a Final Report

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L1735126 was frozen upon receipt in order to arrest the holding time.

Semivolatile Organics

L1735126-01-55: The samples have elevated detection limits due to the dilution required by the sample matrix.

The WG1055360-6/-7 MS/MSD recoveries, performed on L1735126-01, are outside the acceptance criteria for CI3-BZ#18 (131%/125%), CI4-BZ#49 (46%-MS only) and CI7-BZ#183 (46%-MS only).

The WG1055393-6/-7 MS/MSD recoveries, performed on L1735126-21, are outside the acceptance criteria for CI3-BZ#18 (135%/124%).

The WG1055419-6/-7 MS/MSD recoveries, performed on L1735126-41, are outside the acceptance criteria for several compounds. See the QC Report and MS/MSD recovery section for additional details.

The WG1055393-4 Standard Reference Material is outside the QC limits for CI3-BZ#28.

The WG1055419-4 Standard Reference Material is outside the QC limits for CI3-BZ#28.

Pesticides

All recoveries for the LCS/LCSD WG1055392-2/-3 are within SOP criteria (40-140%); therefore no further action was taken.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Case Narrative (continued)

All recoveries for MS/MSD WG1055361-6/-7 and WG1055392-6/-7 are within Lab SOP criteria (40-140%); therefore no further action was taken.

The WG1055417-6/-7 MS/MSD recoveries, performed on L1735126-55, are outside the acceptance criteria for 4,4'-DDE (42%/35%) and cis-Nonachlor (45%-MSD only); however, the associated LCS/LCSD recoveries are within overall method allowances.

WG1055417-7: The surrogate recoveries are outside the acceptance criteria for BZ198 (229%); however, the sample was not re-extracted due to obvious matrix interference.

The WG1055392-5 Laboratory Duplicate RPDs for 4,4'-DDE (58%) and Endrin (49%), performed on L1735126-21, are outside the acceptance criteria.

The WG1055417-5 Laboratory Duplicate RPD for 4,4'-DDE (67%), performed on L1735126-41, is outside the acceptance criteria.

Total Metals

The WG1051696-5 Laboratory Duplicate RPD for Lead (41%) and Zinc (39%), performed on L1735126-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1052852-5 Laboratory Duplicate RPD for Lead (21%) and Nickel (52%), performed on L1735126-21, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1049111-5 Laboratory Duplicate RPD for Chromium (22%), performed on L1735126-41, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Case Narrative (continued)

The WG1050284-5 Laboratory Duplicate RPD for Chromium (42%), Copper (24%), Lead (54%) and Zinc (49%), performed on L1735126-49, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1052853-3/-4 MS/MSD recovery, performed on L1735126-21, is outside the acceptance criteria for Mercury (77%/78%); however, the associated LCS recovery is within overall method allowances. No further action was required.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 11/10/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-01 D
 Client ID: MN NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 14:48
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.4	9.69	2
Acenaphthylene	ND		ug/kg	19.4	9.69	2
Acenaphthene	ND		ug/kg	19.4	9.69	2
Fluorene	ND		ug/kg	19.4	9.69	2
Phenanthrene	ND		ug/kg	19.4	9.69	2
Anthracene	ND		ug/kg	19.4	9.69	2
Fluoranthene	ND		ug/kg	19.4	9.69	2
Pyrene	ND		ug/kg	19.4	9.69	2
Benz(a)anthracene	ND		ug/kg	19.4	9.69	2
Chrysene	ND		ug/kg	19.4	9.69	2
Benzo(b)fluoranthene	ND		ug/kg	19.4	9.69	2
Benzo(k)fluoranthene	ND		ug/kg	19.4	9.69	2
Benzo(a)pyrene	ND		ug/kg	19.4	9.69	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.4	9.69	2
Dibenz(a,h)anthracene	ND		ug/kg	19.4	9.69	2
Benzo(ghi)perylene	ND		ug/kg	19.4	9.69	2
Cl2-BZ#8	ND		ug/kg	1.94	0.969	2
Cl3-BZ#18	ND		ug/kg	1.94	0.969	2
Cl3-BZ#28	ND		ug/kg	1.94	0.969	2
Cl4-BZ#44	ND		ug/kg	1.94	0.969	2
Cl4-BZ#49	ND		ug/kg	1.94	0.969	2
Cl4-BZ#52	ND		ug/kg	1.94	0.969	2
Cl4-BZ#66	ND		ug/kg	1.94	0.969	2
Cl5-BZ#87	ND		ug/kg	1.94	0.969	2
Cl5-BZ#101	ND		ug/kg	1.94	0.969	2
Cl5-BZ#105	ND		ug/kg	1.94	0.969	2
Cl5-BZ#118	ND		ug/kg	1.94	0.969	2
Cl6-BZ#128	ND		ug/kg	1.94	0.969	2
Cl6-BZ#138	ND		ug/kg	1.94	0.969	2
Cl6-BZ#153	ND		ug/kg	1.94	0.969	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-01 D
 Client ID: MN NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.94	0.969	2
CI7-BZ#180	ND		ug/kg	1.94	0.969	2
CI7-BZ#183	ND		ug/kg	1.94	0.969	2
CI7-BZ#184	ND		ug/kg	1.94	0.969	2
CI7-BZ#187	ND		ug/kg	1.94	0.969	2
CI8-BZ#195	ND		ug/kg	1.94	0.969	2
CI9-BZ#206	ND		ug/kg	1.94	0.969	2
CI10-BZ#209	ND		ug/kg	1.94	0.969	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	79		30-150
DBOB	83		30-150
BZ 198	77		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-02 D
 Client ID: MN NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 17:59
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.3	9.65	2
Acenaphthylene	ND		ug/kg	19.3	9.65	2
Acenaphthene	ND		ug/kg	19.3	9.65	2
Fluorene	ND		ug/kg	19.3	9.65	2
Phenanthrene	ND		ug/kg	19.3	9.65	2
Anthracene	ND		ug/kg	19.3	9.65	2
Fluoranthene	ND		ug/kg	19.3	9.65	2
Pyrene	ND		ug/kg	19.3	9.65	2
Benz(a)anthracene	ND		ug/kg	19.3	9.65	2
Chrysene	ND		ug/kg	19.3	9.65	2
Benzo(b)fluoranthene	ND		ug/kg	19.3	9.65	2
Benzo(k)fluoranthene	ND		ug/kg	19.3	9.65	2
Benzo(a)pyrene	ND		ug/kg	19.3	9.65	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.3	9.65	2
Dibenz(a,h)anthracene	ND		ug/kg	19.3	9.65	2
Benzo(ghi)perylene	ND		ug/kg	19.3	9.65	2
Cl2-BZ#8	ND		ug/kg	1.93	0.965	2
Cl3-BZ#18	ND		ug/kg	1.93	0.965	2
Cl3-BZ#28	ND		ug/kg	1.93	0.965	2
Cl4-BZ#44	ND		ug/kg	1.93	0.965	2
Cl4-BZ#49	ND		ug/kg	1.93	0.965	2
Cl4-BZ#52	ND		ug/kg	1.93	0.965	2
Cl4-BZ#66	ND		ug/kg	1.93	0.965	2
Cl5-BZ#87	ND		ug/kg	1.93	0.965	2
Cl5-BZ#101	ND		ug/kg	1.93	0.965	2
Cl5-BZ#105	ND		ug/kg	1.93	0.965	2
Cl5-BZ#118	ND		ug/kg	1.93	0.965	2
Cl6-BZ#128	ND		ug/kg	1.93	0.965	2
Cl6-BZ#138	ND		ug/kg	1.93	0.965	2
Cl6-BZ#153	ND		ug/kg	1.93	0.965	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-02 D
 Client ID: MN NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.93	0.965	2
Cl7-BZ#180	ND		ug/kg	1.93	0.965	2
Cl7-BZ#183	ND		ug/kg	1.93	0.965	2
Cl7-BZ#184	ND		ug/kg	1.93	0.965	2
Cl7-BZ#187	ND		ug/kg	1.93	0.965	2
Cl8-BZ#195	ND		ug/kg	1.93	0.965	2
Cl9-BZ#206	ND		ug/kg	1.93	0.965	2
Cl10-BZ#209	ND		ug/kg	1.93	0.965	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	71		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	75		30-150
DBOB	77		30-150
BZ 198	71		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-03 D
 Client ID: MN NATIVE BACKGROUND REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 18:31
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.6	8.82	2
Acenaphthylene	ND		ug/kg	17.6	8.82	2
Acenaphthene	ND		ug/kg	17.6	8.82	2
Fluorene	ND		ug/kg	17.6	8.82	2
Phenanthrene	ND		ug/kg	17.6	8.82	2
Anthracene	ND		ug/kg	17.6	8.82	2
Fluoranthene	ND		ug/kg	17.6	8.82	2
Pyrene	ND		ug/kg	17.6	8.82	2
Benz(a)anthracene	ND		ug/kg	17.6	8.82	2
Chrysene	ND		ug/kg	17.6	8.82	2
Benzo(b)fluoranthene	ND		ug/kg	17.6	8.82	2
Benzo(k)fluoranthene	ND		ug/kg	17.6	8.82	2
Benzo(a)pyrene	ND		ug/kg	17.6	8.82	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.6	8.82	2
Dibenz(a,h)anthracene	ND		ug/kg	17.6	8.82	2
Benzo(ghi)perylene	ND		ug/kg	17.6	8.82	2
Cl2-BZ#8	ND		ug/kg	1.76	0.882	2
Cl3-BZ#18	ND		ug/kg	1.76	0.882	2
Cl3-BZ#28	ND		ug/kg	1.76	0.882	2
Cl4-BZ#44	ND		ug/kg	1.76	0.882	2
Cl4-BZ#49	ND		ug/kg	1.76	0.882	2
Cl4-BZ#52	ND		ug/kg	1.76	0.882	2
Cl4-BZ#66	ND		ug/kg	1.76	0.882	2
Cl5-BZ#87	ND		ug/kg	1.76	0.882	2
Cl5-BZ#101	ND		ug/kg	1.76	0.882	2
Cl5-BZ#105	ND		ug/kg	1.76	0.882	2
Cl5-BZ#118	ND		ug/kg	1.76	0.882	2
Cl6-BZ#128	ND		ug/kg	1.76	0.882	2
Cl6-BZ#138	ND		ug/kg	1.76	0.882	2
Cl6-BZ#153	ND		ug/kg	1.76	0.882	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-03 D
 Client ID: MN NATIVE BACKGROUND REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.76	0.882	2
Cl7-BZ#180	ND		ug/kg	1.76	0.882	2
Cl7-BZ#183	ND		ug/kg	1.76	0.882	2
Cl7-BZ#184	ND		ug/kg	1.76	0.882	2
Cl7-BZ#187	ND		ug/kg	1.76	0.882	2
Cl8-BZ#195	ND		ug/kg	1.76	0.882	2
Cl9-BZ#206	ND		ug/kg	1.76	0.882	2
Cl10-BZ#209	ND		ug/kg	1.76	0.882	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	81		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	81		30-150
BZ 198	76		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-04 D
 Client ID: MN NATIVE BACKGROUND REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 19:03
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.5	9.26	2
Acenaphthylene	ND		ug/kg	18.5	9.26	2
Acenaphthene	ND		ug/kg	18.5	9.26	2
Fluorene	ND		ug/kg	18.5	9.26	2
Phenanthrene	ND		ug/kg	18.5	9.26	2
Anthracene	ND		ug/kg	18.5	9.26	2
Fluoranthene	ND		ug/kg	18.5	9.26	2
Pyrene	ND		ug/kg	18.5	9.26	2
Benz(a)anthracene	ND		ug/kg	18.5	9.26	2
Chrysene	ND		ug/kg	18.5	9.26	2
Benzo(b)fluoranthene	ND		ug/kg	18.5	9.26	2
Benzo(k)fluoranthene	ND		ug/kg	18.5	9.26	2
Benzo(a)pyrene	ND		ug/kg	18.5	9.26	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.5	9.26	2
Dibenz(a,h)anthracene	ND		ug/kg	18.5	9.26	2
Benzo(ghi)perylene	ND		ug/kg	18.5	9.26	2
Cl2-BZ#8	ND		ug/kg	1.85	0.926	2
Cl3-BZ#18	ND		ug/kg	1.85	0.926	2
Cl3-BZ#28	ND		ug/kg	1.85	0.926	2
Cl4-BZ#44	ND		ug/kg	1.85	0.926	2
Cl4-BZ#49	ND		ug/kg	1.85	0.926	2
Cl4-BZ#52	ND		ug/kg	1.85	0.926	2
Cl4-BZ#66	ND		ug/kg	1.85	0.926	2
Cl5-BZ#87	ND		ug/kg	1.85	0.926	2
Cl5-BZ#101	ND		ug/kg	1.85	0.926	2
Cl5-BZ#105	ND		ug/kg	1.85	0.926	2
Cl5-BZ#118	ND		ug/kg	1.85	0.926	2
Cl6-BZ#128	ND		ug/kg	1.85	0.926	2
Cl6-BZ#138	ND		ug/kg	1.85	0.926	2
Cl6-BZ#153	ND		ug/kg	1.85	0.926	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-04 D
 Client ID: MN NATIVE BACKGROUND REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.85	0.926	2
Cl7-BZ#180	ND		ug/kg	1.85	0.926	2
Cl7-BZ#183	ND		ug/kg	1.85	0.926	2
Cl7-BZ#184	ND		ug/kg	1.85	0.926	2
Cl7-BZ#187	ND		ug/kg	1.85	0.926	2
Cl8-BZ#195	ND		ug/kg	1.85	0.926	2
Cl9-BZ#206	ND		ug/kg	1.85	0.926	2
Cl10-BZ#209	ND		ug/kg	1.85	0.926	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	79		30-150
Benzo(b)fluoranthene-d12	79		30-150
DBOB	77		30-150
BZ 198	73		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-05 D
 Client ID: MN NATIVE BACKGROUND REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 19:36
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.2	9.09	2
Acenaphthylene	ND		ug/kg	18.2	9.09	2
Acenaphthene	ND		ug/kg	18.2	9.09	2
Fluorene	ND		ug/kg	18.2	9.09	2
Phenanthrene	ND		ug/kg	18.2	9.09	2
Anthracene	ND		ug/kg	18.2	9.09	2
Fluoranthene	ND		ug/kg	18.2	9.09	2
Pyrene	ND		ug/kg	18.2	9.09	2
Benz(a)anthracene	ND		ug/kg	18.2	9.09	2
Chrysene	ND		ug/kg	18.2	9.09	2
Benzo(b)fluoranthene	ND		ug/kg	18.2	9.09	2
Benzo(k)fluoranthene	ND		ug/kg	18.2	9.09	2
Benzo(a)pyrene	ND		ug/kg	18.2	9.09	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.2	9.09	2
Dibenz(a,h)anthracene	ND		ug/kg	18.2	9.09	2
Benzo(ghi)perylene	ND		ug/kg	18.2	9.09	2
Cl2-BZ#8	ND		ug/kg	1.82	0.909	2
Cl3-BZ#18	ND		ug/kg	1.82	0.909	2
Cl3-BZ#28	ND		ug/kg	1.82	0.909	2
Cl4-BZ#44	ND		ug/kg	1.82	0.909	2
Cl4-BZ#49	ND		ug/kg	1.82	0.909	2
Cl4-BZ#52	ND		ug/kg	1.82	0.909	2
Cl4-BZ#66	ND		ug/kg	1.82	0.909	2
Cl5-BZ#87	ND		ug/kg	1.82	0.909	2
Cl5-BZ#101	ND		ug/kg	1.82	0.909	2
Cl5-BZ#105	ND		ug/kg	1.82	0.909	2
Cl5-BZ#118	ND		ug/kg	1.82	0.909	2
Cl6-BZ#128	ND		ug/kg	1.82	0.909	2
Cl6-BZ#138	ND		ug/kg	1.82	0.909	2
Cl6-BZ#153	ND		ug/kg	1.82	0.909	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-05 D
 Client ID: MN NATIVE BACKGROUND REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.82	0.909	2
Cl7-BZ#180	ND		ug/kg	1.82	0.909	2
Cl7-BZ#183	ND		ug/kg	1.82	0.909	2
Cl7-BZ#184	ND		ug/kg	1.82	0.909	2
Cl7-BZ#187	ND		ug/kg	1.82	0.909	2
Cl8-BZ#195	ND		ug/kg	1.82	0.909	2
Cl9-BZ#206	ND		ug/kg	1.82	0.909	2
Cl10-BZ#209	ND		ug/kg	1.82	0.909	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	76		30-150
Benzo(b)fluoranthene-d12	74		30-150
DBOB	80		30-150
BZ 198	75		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-06 D
 Client ID: MN LABORATORY CONTROL REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 20:09
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.8	8.93	2
Acenaphthylene	ND		ug/kg	17.8	8.93	2
Acenaphthene	ND		ug/kg	17.8	8.93	2
Fluorene	ND		ug/kg	17.8	8.93	2
Phenanthrene	ND		ug/kg	17.8	8.93	2
Anthracene	ND		ug/kg	17.8	8.93	2
Fluoranthene	ND		ug/kg	17.8	8.93	2
Pyrene	ND		ug/kg	17.8	8.93	2
Benz(a)anthracene	ND		ug/kg	17.8	8.93	2
Chrysene	ND		ug/kg	17.8	8.93	2
Benzo(b)fluoranthene	ND		ug/kg	17.8	8.93	2
Benzo(k)fluoranthene	ND		ug/kg	17.8	8.93	2
Benzo(a)pyrene	ND		ug/kg	17.8	8.93	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.8	8.93	2
Dibenz(a,h)anthracene	ND		ug/kg	17.8	8.93	2
Benzo(ghi)perylene	ND		ug/kg	17.8	8.93	2
Cl2-BZ#8	ND		ug/kg	1.78	0.893	2
Cl3-BZ#18	ND		ug/kg	1.78	0.893	2
Cl3-BZ#28	ND		ug/kg	1.78	0.893	2
Cl4-BZ#44	ND		ug/kg	1.78	0.893	2
Cl4-BZ#49	ND		ug/kg	1.78	0.893	2
Cl4-BZ#52	ND		ug/kg	1.78	0.893	2
Cl4-BZ#66	ND		ug/kg	1.78	0.893	2
Cl5-BZ#87	ND		ug/kg	1.78	0.893	2
Cl5-BZ#101	ND		ug/kg	1.78	0.893	2
Cl5-BZ#105	ND		ug/kg	1.78	0.893	2
Cl5-BZ#118	ND		ug/kg	1.78	0.893	2
Cl6-BZ#128	ND		ug/kg	1.78	0.893	2
Cl6-BZ#138	ND		ug/kg	1.78	0.893	2
Cl6-BZ#153	ND		ug/kg	1.78	0.893	2

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-06 D
 Client ID: MN LABORATORY CONTROL REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.78	0.893	2
Cl7-BZ#180	ND		ug/kg	1.78	0.893	2
Cl7-BZ#183	ND		ug/kg	1.78	0.893	2
Cl7-BZ#184	ND		ug/kg	1.78	0.893	2
Cl7-BZ#187	ND		ug/kg	1.78	0.893	2
Cl8-BZ#195	ND		ug/kg	1.78	0.893	2
Cl9-BZ#206	ND		ug/kg	1.78	0.893	2
Cl10-BZ#209	ND		ug/kg	1.78	0.893	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	68		30-150
Pyrene-d10	71		30-150
Benzo(b)fluoranthene-d12	70		30-150
DBOB	78		30-150
BZ 198	72		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-07 D
 Client ID: MN LABORATORY CONTROL REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 20:41
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.2	8.59	2
Acenaphthylene	ND		ug/kg	17.2	8.59	2
Acenaphthene	ND		ug/kg	17.2	8.59	2
Fluorene	ND		ug/kg	17.2	8.59	2
Phenanthrene	ND		ug/kg	17.2	8.59	2
Anthracene	ND		ug/kg	17.2	8.59	2
Fluoranthene	ND		ug/kg	17.2	8.59	2
Pyrene	ND		ug/kg	17.2	8.59	2
Benz(a)anthracene	ND		ug/kg	17.2	8.59	2
Chrysene	ND		ug/kg	17.2	8.59	2
Benzo(b)fluoranthene	ND		ug/kg	17.2	8.59	2
Benzo(k)fluoranthene	ND		ug/kg	17.2	8.59	2
Benzo(a)pyrene	ND		ug/kg	17.2	8.59	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.2	8.59	2
Dibenz(a,h)anthracene	ND		ug/kg	17.2	8.59	2
Benzo(ghi)perylene	ND		ug/kg	17.2	8.59	2
Cl2-BZ#8	ND		ug/kg	1.72	0.859	2
Cl3-BZ#18	ND		ug/kg	1.72	0.859	2
Cl3-BZ#28	ND		ug/kg	1.72	0.859	2
Cl4-BZ#44	ND		ug/kg	1.72	0.859	2
Cl4-BZ#49	ND		ug/kg	1.72	0.859	2
Cl4-BZ#52	ND		ug/kg	1.72	0.859	2
Cl4-BZ#66	ND		ug/kg	1.72	0.859	2
Cl5-BZ#87	ND		ug/kg	1.72	0.859	2
Cl5-BZ#101	ND		ug/kg	1.72	0.859	2
Cl5-BZ#105	ND		ug/kg	1.72	0.859	2
Cl5-BZ#118	ND		ug/kg	1.72	0.859	2
Cl6-BZ#128	ND		ug/kg	1.72	0.859	2
Cl6-BZ#138	ND		ug/kg	1.72	0.859	2
Cl6-BZ#153	ND		ug/kg	1.72	0.859	2

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-07 D
 Client ID: MN LABORATORY CONTROL REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.72	0.859	2
Cl7-BZ#180	ND		ug/kg	1.72	0.859	2
Cl7-BZ#183	ND		ug/kg	1.72	0.859	2
Cl7-BZ#184	ND		ug/kg	1.72	0.859	2
Cl7-BZ#187	ND		ug/kg	1.72	0.859	2
Cl8-BZ#195	ND		ug/kg	1.72	0.859	2
Cl9-BZ#206	ND		ug/kg	1.72	0.859	2
Cl10-BZ#209	ND		ug/kg	1.72	0.859	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	73		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	78		30-150
DBOB	81		30-150
BZ 198	76		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-08 D
 Client ID: MN LABORATORY CONTROL REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 21:14
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.43	2
Acenaphthylene	ND		ug/kg	16.9	8.43	2
Acenaphthene	ND		ug/kg	16.9	8.43	2
Fluorene	ND		ug/kg	16.9	8.43	2
Phenanthrene	ND		ug/kg	16.9	8.43	2
Anthracene	ND		ug/kg	16.9	8.43	2
Fluoranthene	ND		ug/kg	16.9	8.43	2
Pyrene	ND		ug/kg	16.9	8.43	2
Benz(a)anthracene	ND		ug/kg	16.9	8.43	2
Chrysene	ND		ug/kg	16.9	8.43	2
Benzo(b)fluoranthene	ND		ug/kg	16.9	8.43	2
Benzo(k)fluoranthene	ND		ug/kg	16.9	8.43	2
Benzo(a)pyrene	ND		ug/kg	16.9	8.43	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	16.9	8.43	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.43	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.43	2
Cl2-BZ#8	ND		ug/kg	1.69	0.843	2
Cl3-BZ#18	ND		ug/kg	1.69	0.843	2
Cl3-BZ#28	ND		ug/kg	1.69	0.843	2
Cl4-BZ#44	ND		ug/kg	1.69	0.843	2
Cl4-BZ#49	ND		ug/kg	1.69	0.843	2
Cl4-BZ#52	ND		ug/kg	1.69	0.843	2
Cl4-BZ#66	ND		ug/kg	1.69	0.843	2
Cl5-BZ#87	ND		ug/kg	1.69	0.843	2
Cl5-BZ#101	ND		ug/kg	1.69	0.843	2
Cl5-BZ#105	ND		ug/kg	1.69	0.843	2
Cl5-BZ#118	ND		ug/kg	1.69	0.843	2
Cl6-BZ#128	ND		ug/kg	1.69	0.843	2
Cl6-BZ#138	ND		ug/kg	1.69	0.843	2
Cl6-BZ#153	ND		ug/kg	1.69	0.843	2

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-08 D
 Client ID: MN LABORATORY CONTROL REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.69	0.843	2
Cl7-BZ#180	ND		ug/kg	1.69	0.843	2
Cl7-BZ#183	ND		ug/kg	1.69	0.843	2
Cl7-BZ#184	ND		ug/kg	1.69	0.843	2
Cl7-BZ#187	ND		ug/kg	1.69	0.843	2
Cl8-BZ#195	ND		ug/kg	1.69	0.843	2
Cl9-BZ#206	ND		ug/kg	1.69	0.843	2
Cl10-BZ#209	ND		ug/kg	1.69	0.843	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	79		30-150
Benzo(b)fluoranthene-d12	78		30-150
DBOB	78		30-150
BZ 198	74		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-09 D
 Client ID: MN LABORATORY CONTROL REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 21:47
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.3	9.16	2
Acenaphthylene	ND		ug/kg	18.3	9.16	2
Acenaphthene	ND		ug/kg	18.3	9.16	2
Fluorene	ND		ug/kg	18.3	9.16	2
Phenanthrene	ND		ug/kg	18.3	9.16	2
Anthracene	ND		ug/kg	18.3	9.16	2
Fluoranthene	ND		ug/kg	18.3	9.16	2
Pyrene	ND		ug/kg	18.3	9.16	2
Benz(a)anthracene	ND		ug/kg	18.3	9.16	2
Chrysene	ND		ug/kg	18.3	9.16	2
Benzo(b)fluoranthene	ND		ug/kg	18.3	9.16	2
Benzo(k)fluoranthene	ND		ug/kg	18.3	9.16	2
Benzo(a)pyrene	ND		ug/kg	18.3	9.16	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.3	9.16	2
Dibenz(a,h)anthracene	ND		ug/kg	18.3	9.16	2
Benzo(ghi)perylene	ND		ug/kg	18.3	9.16	2
Cl2-BZ#8	ND		ug/kg	1.83	0.916	2
Cl3-BZ#18	ND		ug/kg	1.83	0.916	2
Cl3-BZ#28	ND		ug/kg	1.83	0.916	2
Cl4-BZ#44	ND		ug/kg	1.83	0.916	2
Cl4-BZ#49	ND		ug/kg	1.83	0.916	2
Cl4-BZ#52	ND		ug/kg	1.83	0.916	2
Cl4-BZ#66	ND		ug/kg	1.83	0.916	2
Cl5-BZ#87	ND		ug/kg	1.83	0.916	2
Cl5-BZ#101	ND		ug/kg	1.83	0.916	2
Cl5-BZ#105	ND		ug/kg	1.83	0.916	2
Cl5-BZ#118	ND		ug/kg	1.83	0.916	2
Cl6-BZ#128	ND		ug/kg	1.83	0.916	2
Cl6-BZ#138	ND		ug/kg	1.83	0.916	2
Cl6-BZ#153	ND		ug/kg	1.83	0.916	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-09 D
 Client ID: MN LABORATORY CONTROL REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.83	0.916	2
Cl7-BZ#180	ND		ug/kg	1.83	0.916	2
Cl7-BZ#183	ND		ug/kg	1.83	0.916	2
Cl7-BZ#184	ND		ug/kg	1.83	0.916	2
Cl7-BZ#187	ND		ug/kg	1.83	0.916	2
Cl8-BZ#195	ND		ug/kg	1.83	0.916	2
Cl9-BZ#206	ND		ug/kg	1.83	0.916	2
Cl10-BZ#209	ND		ug/kg	1.83	0.916	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	54		30-150
Pyrene-d10	61		30-150
Benzo(b)fluoranthene-d12	60		30-150
DBOB	64		30-150
BZ 198	59		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-10 D
 Client ID: MN LABORATORY CONTROL REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 22:19
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.40	2
Acenaphthylene	ND		ug/kg	18.8	9.40	2
Acenaphthene	13.4	J	ug/kg	18.8	9.40	2
Fluorene	ND		ug/kg	18.8	9.40	2
Phenanthrene	ND		ug/kg	18.8	9.40	2
Anthracene	ND		ug/kg	18.8	9.40	2
Fluoranthene	ND		ug/kg	18.8	9.40	2
Pyrene	ND		ug/kg	18.8	9.40	2
Benz(a)anthracene	ND		ug/kg	18.8	9.40	2
Chrysene	ND		ug/kg	18.8	9.40	2
Benzo(b)fluoranthene	ND		ug/kg	18.8	9.40	2
Benzo(k)fluoranthene	ND		ug/kg	18.8	9.40	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.40	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.8	9.40	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.40	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.40	2
Cl2-BZ#8	ND		ug/kg	1.88	0.940	2
Cl3-BZ#18	ND		ug/kg	1.88	0.940	2
Cl3-BZ#28	ND		ug/kg	1.88	0.940	2
Cl4-BZ#44	ND		ug/kg	1.88	0.940	2
Cl4-BZ#49	ND		ug/kg	1.88	0.940	2
Cl4-BZ#52	ND		ug/kg	1.88	0.940	2
Cl4-BZ#66	ND		ug/kg	1.88	0.940	2
Cl5-BZ#87	ND		ug/kg	1.88	0.940	2
Cl5-BZ#101	ND		ug/kg	1.88	0.940	2
Cl5-BZ#105	ND		ug/kg	1.88	0.940	2
Cl5-BZ#118	ND		ug/kg	1.88	0.940	2
Cl6-BZ#128	ND		ug/kg	1.88	0.940	2
Cl6-BZ#138	ND		ug/kg	1.88	0.940	2
Cl6-BZ#153	ND		ug/kg	1.88	0.940	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-10 D
 Client ID: MN LABORATORY CONTROL REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.88	0.940	2
Cl7-BZ#180	ND		ug/kg	1.88	0.940	2
Cl7-BZ#183	ND		ug/kg	1.88	0.940	2
Cl7-BZ#184	ND		ug/kg	1.88	0.940	2
Cl7-BZ#187	ND		ug/kg	1.88	0.940	2
Cl8-BZ#195	ND		ug/kg	1.88	0.940	2
Cl9-BZ#206	ND		ug/kg	1.88	0.940	2
Cl10-BZ#209	ND		ug/kg	1.88	0.940	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	76		30-150
DBOB	80		30-150
BZ 198	78		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-11 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 22:52
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.3	9.65	2
Acenaphthylene	ND		ug/kg	19.3	9.65	2
Acenaphthene	ND		ug/kg	19.3	9.65	2
Fluorene	ND		ug/kg	19.3	9.65	2
Phenanthrene	ND		ug/kg	19.3	9.65	2
Anthracene	ND		ug/kg	19.3	9.65	2
Fluoranthene	ND		ug/kg	19.3	9.65	2
Pyrene	ND		ug/kg	19.3	9.65	2
Benz(a)anthracene	ND		ug/kg	19.3	9.65	2
Chrysene	ND		ug/kg	19.3	9.65	2
Benzo(b)fluoranthene	ND		ug/kg	19.3	9.65	2
Benzo(k)fluoranthene	ND		ug/kg	19.3	9.65	2
Benzo(a)pyrene	ND		ug/kg	19.3	9.65	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.3	9.65	2
Dibenz(a,h)anthracene	ND		ug/kg	19.3	9.65	2
Benzo(ghi)perylene	ND		ug/kg	19.3	9.65	2
Cl2-BZ#8	ND		ug/kg	1.93	0.965	2
Cl3-BZ#18	ND		ug/kg	1.93	0.965	2
Cl3-BZ#28	ND		ug/kg	1.93	0.965	2
Cl4-BZ#44	ND		ug/kg	1.93	0.965	2
Cl4-BZ#49	ND		ug/kg	1.93	0.965	2
Cl4-BZ#52	ND		ug/kg	1.93	0.965	2
Cl4-BZ#66	ND		ug/kg	1.93	0.965	2
Cl5-BZ#87	ND		ug/kg	1.93	0.965	2
Cl5-BZ#101	ND		ug/kg	1.93	0.965	2
Cl5-BZ#105	ND		ug/kg	1.93	0.965	2
Cl5-BZ#118	ND		ug/kg	1.93	0.965	2
Cl6-BZ#128	ND		ug/kg	1.93	0.965	2
Cl6-BZ#138	ND		ug/kg	1.93	0.965	2
Cl6-BZ#153	ND		ug/kg	1.93	0.965	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-11 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.93	0.965	2
CI7-BZ#180	ND		ug/kg	1.93	0.965	2
CI7-BZ#183	ND		ug/kg	1.93	0.965	2
CI7-BZ#184	ND		ug/kg	1.93	0.965	2
CI7-BZ#187	ND		ug/kg	1.93	0.965	2
CI8-BZ#195	ND		ug/kg	1.93	0.965	2
CI9-BZ#206	ND		ug/kg	1.93	0.965	2
CI10-BZ#209	ND		ug/kg	1.93	0.965	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	71		30-150
Pyrene-d10	74		30-150
Benzo(b)fluoranthene-d12	73		30-150
DBOB	80		30-150
BZ 198	78		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-12 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/01/17 23:25
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.0	9.01	2
Acenaphthylene	ND		ug/kg	18.0	9.01	2
Acenaphthene	ND		ug/kg	18.0	9.01	2
Fluorene	ND		ug/kg	18.0	9.01	2
Phenanthrene	ND		ug/kg	18.0	9.01	2
Anthracene	ND		ug/kg	18.0	9.01	2
Fluoranthene	ND		ug/kg	18.0	9.01	2
Pyrene	ND		ug/kg	18.0	9.01	2
Benz(a)anthracene	ND		ug/kg	18.0	9.01	2
Chrysene	ND		ug/kg	18.0	9.01	2
Benzo(b)fluoranthene	ND		ug/kg	18.0	9.01	2
Benzo(k)fluoranthene	ND		ug/kg	18.0	9.01	2
Benzo(a)pyrene	ND		ug/kg	18.0	9.01	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.0	9.01	2
Dibenz(a,h)anthracene	ND		ug/kg	18.0	9.01	2
Benzo(ghi)perylene	ND		ug/kg	18.0	9.01	2
Cl2-BZ#8	ND		ug/kg	1.80	0.901	2
Cl3-BZ#18	ND		ug/kg	1.80	0.901	2
Cl3-BZ#28	ND		ug/kg	1.80	0.901	2
Cl4-BZ#44	ND		ug/kg	1.80	0.901	2
Cl4-BZ#49	ND		ug/kg	1.80	0.901	2
Cl4-BZ#52	ND		ug/kg	1.80	0.901	2
Cl4-BZ#66	ND		ug/kg	1.80	0.901	2
Cl5-BZ#87	ND		ug/kg	1.80	0.901	2
Cl5-BZ#101	ND		ug/kg	1.80	0.901	2
Cl5-BZ#105	ND		ug/kg	1.80	0.901	2
Cl5-BZ#118	ND		ug/kg	1.80	0.901	2
Cl6-BZ#128	ND		ug/kg	1.80	0.901	2
Cl6-BZ#138	ND		ug/kg	1.80	0.901	2
Cl6-BZ#153	ND		ug/kg	1.80	0.901	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-12 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.80	0.901	2
Cl7-BZ#180	ND		ug/kg	1.80	0.901	2
Cl7-BZ#183	ND		ug/kg	1.80	0.901	2
Cl7-BZ#184	ND		ug/kg	1.80	0.901	2
Cl7-BZ#187	ND		ug/kg	1.80	0.901	2
Cl8-BZ#195	ND		ug/kg	1.80	0.901	2
Cl9-BZ#206	ND		ug/kg	1.80	0.901	2
Cl10-BZ#209	ND		ug/kg	1.80	0.901	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	69		30-150
Pyrene-d10	73		30-150
Benzo(b)fluoranthene-d12	72		30-150
DBOB	78		30-150
BZ 198	74		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-13 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 17:45

Analytical Date: 11/01/17 23:57

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.1	9.06	2
Acenaphthylene	ND		ug/kg	18.1	9.06	2
Acenaphthene	ND		ug/kg	18.1	9.06	2
Fluorene	ND		ug/kg	18.1	9.06	2
Phenanthrene	ND		ug/kg	18.1	9.06	2
Anthracene	ND		ug/kg	18.1	9.06	2
Fluoranthene	ND		ug/kg	18.1	9.06	2
Pyrene	ND		ug/kg	18.1	9.06	2
Benz(a)anthracene	ND		ug/kg	18.1	9.06	2
Chrysene	ND		ug/kg	18.1	9.06	2
Benzo(b)fluoranthene	ND		ug/kg	18.1	9.06	2
Benzo(k)fluoranthene	ND		ug/kg	18.1	9.06	2
Benzo(a)pyrene	ND		ug/kg	18.1	9.06	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.1	9.06	2
Dibenz(a,h)anthracene	ND		ug/kg	18.1	9.06	2
Benzo(ghi)perylene	ND		ug/kg	18.1	9.06	2
Cl2-BZ#8	ND		ug/kg	1.81	0.906	2
Cl3-BZ#18	ND		ug/kg	1.81	0.906	2
Cl3-BZ#28	ND		ug/kg	1.81	0.906	2
Cl4-BZ#44	ND		ug/kg	1.81	0.906	2
Cl4-BZ#49	ND		ug/kg	1.81	0.906	2
Cl4-BZ#52	ND		ug/kg	1.81	0.906	2
Cl4-BZ#66	ND		ug/kg	1.81	0.906	2
Cl5-BZ#87	ND		ug/kg	1.81	0.906	2
Cl5-BZ#101	ND		ug/kg	1.81	0.906	2
Cl5-BZ#105	ND		ug/kg	1.81	0.906	2
Cl5-BZ#118	ND		ug/kg	1.81	0.906	2
Cl6-BZ#128	ND		ug/kg	1.81	0.906	2
Cl6-BZ#138	ND		ug/kg	1.81	0.906	2
Cl6-BZ#153	ND		ug/kg	1.81	0.906	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-13 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.81	0.906	2
CI7-BZ#180	ND		ug/kg	1.81	0.906	2
CI7-BZ#183	ND		ug/kg	1.81	0.906	2
CI7-BZ#184	ND		ug/kg	1.81	0.906	2
CI7-BZ#187	ND		ug/kg	1.81	0.906	2
CI8-BZ#195	ND		ug/kg	1.81	0.906	2
CI9-BZ#206	ND		ug/kg	1.81	0.906	2
CI10-BZ#209	ND		ug/kg	1.81	0.906	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	72		30-150
Pyrene-d10	73		30-150
Benzo(b)fluoranthene-d12	73		30-150
DBOB	81		30-150
BZ 198	76		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-14 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 00:30
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.3	8.65	2
Acenaphthylene	ND		ug/kg	17.3	8.65	2
Acenaphthene	ND		ug/kg	17.3	8.65	2
Fluorene	ND		ug/kg	17.3	8.65	2
Phenanthrene	9.37	J	ug/kg	17.3	8.65	2
Anthracene	ND		ug/kg	17.3	8.65	2
Fluoranthene	13.6	J	ug/kg	17.3	8.65	2
Pyrene	14.6	J	ug/kg	17.3	8.65	2
Benz(a)anthracene	19.0		ug/kg	17.3	8.65	2
Chrysene	ND		ug/kg	17.3	8.65	2
Benzo(b)fluoranthene	11.7	J	ug/kg	17.3	8.65	2
Benzo(k)fluoranthene	ND		ug/kg	17.3	8.65	2
Benzo(a)pyrene	ND		ug/kg	17.3	8.65	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.3	8.65	2
Dibenz(a,h)anthracene	ND		ug/kg	17.3	8.65	2
Benzo(ghi)perylene	ND		ug/kg	17.3	8.65	2
Cl2-BZ#8	ND		ug/kg	1.73	0.865	2
Cl3-BZ#18	ND		ug/kg	1.73	0.865	2
Cl3-BZ#28	ND		ug/kg	1.73	0.865	2
Cl4-BZ#44	ND		ug/kg	1.73	0.865	2
Cl4-BZ#49	ND		ug/kg	1.73	0.865	2
Cl4-BZ#52	ND		ug/kg	1.73	0.865	2
Cl4-BZ#66	ND		ug/kg	1.73	0.865	2
Cl5-BZ#87	ND		ug/kg	1.73	0.865	2
Cl5-BZ#101	ND		ug/kg	1.73	0.865	2
Cl5-BZ#105	ND		ug/kg	1.73	0.865	2
Cl5-BZ#118	ND		ug/kg	1.73	0.865	2
Cl6-BZ#128	ND		ug/kg	1.73	0.865	2
Cl6-BZ#138	ND		ug/kg	1.73	0.865	2
Cl6-BZ#153	ND		ug/kg	1.73	0.865	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-14 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.73	0.865	2
Cl7-BZ#180	ND		ug/kg	1.73	0.865	2
Cl7-BZ#183	ND		ug/kg	1.73	0.865	2
Cl7-BZ#184	ND		ug/kg	1.73	0.865	2
Cl7-BZ#187	ND		ug/kg	1.73	0.865	2
Cl8-BZ#195	ND		ug/kg	1.73	0.865	2
Cl9-BZ#206	ND		ug/kg	1.73	0.865	2
Cl10-BZ#209	ND		ug/kg	1.73	0.865	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	84		30-150
Pyrene-d10	89		30-150
Benzo(b)fluoranthene-d12	86		30-150
DBOB	91		30-150
BZ 198	86		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-15 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 17:45

Analytical Date: 11/02/17 01:02

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.40	2
Acenaphthylene	ND		ug/kg	18.8	9.40	2
Acenaphthene	ND		ug/kg	18.8	9.40	2
Fluorene	ND		ug/kg	18.8	9.40	2
Phenanthrene	ND		ug/kg	18.8	9.40	2
Anthracene	ND		ug/kg	18.8	9.40	2
Fluoranthene	ND		ug/kg	18.8	9.40	2
Pyrene	ND		ug/kg	18.8	9.40	2
Benz(a)anthracene	ND		ug/kg	18.8	9.40	2
Chrysene	ND		ug/kg	18.8	9.40	2
Benzo(b)fluoranthene	ND		ug/kg	18.8	9.40	2
Benzo(k)fluoranthene	ND		ug/kg	18.8	9.40	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.40	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.8	9.40	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.40	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.40	2
Cl2-BZ#8	ND		ug/kg	1.88	0.940	2
Cl3-BZ#18	ND		ug/kg	1.88	0.940	2
Cl3-BZ#28	ND		ug/kg	1.88	0.940	2
Cl4-BZ#44	ND		ug/kg	1.88	0.940	2
Cl4-BZ#49	ND		ug/kg	1.88	0.940	2
Cl4-BZ#52	ND		ug/kg	1.88	0.940	2
Cl4-BZ#66	ND		ug/kg	1.88	0.940	2
Cl5-BZ#87	ND		ug/kg	1.88	0.940	2
Cl5-BZ#101	ND		ug/kg	1.88	0.940	2
Cl5-BZ#105	ND		ug/kg	1.88	0.940	2
Cl5-BZ#118	ND		ug/kg	1.88	0.940	2
Cl6-BZ#128	ND		ug/kg	1.88	0.940	2
Cl6-BZ#138	ND		ug/kg	1.88	0.940	2
Cl6-BZ#153	ND		ug/kg	1.88	0.940	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-15 D
 Client ID: MN CLDS REFERENCE SEDIMENT REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.88	0.940	2
Cl7-BZ#180	ND		ug/kg	1.88	0.940	2
Cl7-BZ#183	ND		ug/kg	1.88	0.940	2
Cl7-BZ#184	ND		ug/kg	1.88	0.940	2
Cl7-BZ#187	ND		ug/kg	1.88	0.940	2
Cl8-BZ#195	ND		ug/kg	1.88	0.940	2
Cl9-BZ#206	ND		ug/kg	1.88	0.940	2
Cl10-BZ#209	ND		ug/kg	1.88	0.940	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	74		30-150
Pyrene-d10	81		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	83		30-150
BZ 198	83		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-16 D
 Client ID: MN COMPOSITE 1 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 01:35
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.8	8.88	2
Acenaphthylene	ND		ug/kg	17.8	8.88	2
Acenaphthene	ND		ug/kg	17.8	8.88	2
Fluorene	ND		ug/kg	17.8	8.88	2
Phenanthrene	ND		ug/kg	17.8	8.88	2
Anthracene	ND		ug/kg	17.8	8.88	2
Fluoranthene	ND		ug/kg	17.8	8.88	2
Pyrene	ND		ug/kg	17.8	8.88	2
Benz(a)anthracene	ND		ug/kg	17.8	8.88	2
Chrysene	ND		ug/kg	17.8	8.88	2
Benzo(b)fluoranthene	ND		ug/kg	17.8	8.88	2
Benzo(k)fluoranthene	ND		ug/kg	17.8	8.88	2
Benzo(a)pyrene	ND		ug/kg	17.8	8.88	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.8	8.88	2
Dibenz(a,h)anthracene	ND		ug/kg	17.8	8.88	2
Benzo(ghi)perylene	ND		ug/kg	17.8	8.88	2
Cl2-BZ#8	ND		ug/kg	1.78	0.888	2
Cl3-BZ#18	ND		ug/kg	1.78	0.888	2
Cl3-BZ#28	ND		ug/kg	1.78	0.888	2
Cl4-BZ#44	ND		ug/kg	1.78	0.888	2
Cl4-BZ#49	ND		ug/kg	1.78	0.888	2
Cl4-BZ#52	ND		ug/kg	1.78	0.888	2
Cl4-BZ#66	ND		ug/kg	1.78	0.888	2
Cl5-BZ#87	ND		ug/kg	1.78	0.888	2
Cl5-BZ#101	ND		ug/kg	1.78	0.888	2
Cl5-BZ#105	ND		ug/kg	1.78	0.888	2
Cl5-BZ#118	ND		ug/kg	1.78	0.888	2
Cl6-BZ#128	ND		ug/kg	1.78	0.888	2
Cl6-BZ#138	ND		ug/kg	1.78	0.888	2
Cl6-BZ#153	ND		ug/kg	1.78	0.888	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-16 D
 Client ID: MN COMPOSITE 1 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.78	0.888	2
Cl7-BZ#180	ND		ug/kg	1.78	0.888	2
Cl7-BZ#183	ND		ug/kg	1.78	0.888	2
Cl7-BZ#184	ND		ug/kg	1.78	0.888	2
Cl7-BZ#187	ND		ug/kg	1.78	0.888	2
Cl8-BZ#195	ND		ug/kg	1.78	0.888	2
Cl9-BZ#206	ND		ug/kg	1.78	0.888	2
Cl10-BZ#209	ND		ug/kg	1.78	0.888	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	65		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	68		30-150
DBOB	72		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-17 D
 Client ID: MN COMPOSITE 1 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 17:45

Analytical Date: 11/02/17 02:07

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.46	2
Acenaphthylene	ND		ug/kg	16.9	8.46	2
Acenaphthene	ND		ug/kg	16.9	8.46	2
Fluorene	ND		ug/kg	16.9	8.46	2
Phenanthrene	ND		ug/kg	16.9	8.46	2
Anthracene	ND		ug/kg	16.9	8.46	2
Fluoranthene	ND		ug/kg	16.9	8.46	2
Pyrene	ND		ug/kg	16.9	8.46	2
Benz(a)anthracene	ND		ug/kg	16.9	8.46	2
Chrysene	ND		ug/kg	16.9	8.46	2
Benzo(b)fluoranthene	ND		ug/kg	16.9	8.46	2
Benzo(k)fluoranthene	ND		ug/kg	16.9	8.46	2
Benzo(a)pyrene	ND		ug/kg	16.9	8.46	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	16.9	8.46	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.46	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.46	2
Cl2-BZ#8	ND		ug/kg	1.69	0.846	2
Cl3-BZ#18	ND		ug/kg	1.69	0.846	2
Cl3-BZ#28	ND		ug/kg	1.69	0.846	2
Cl4-BZ#44	ND		ug/kg	1.69	0.846	2
Cl4-BZ#49	ND		ug/kg	1.69	0.846	2
Cl4-BZ#52	ND		ug/kg	1.69	0.846	2
Cl4-BZ#66	ND		ug/kg	1.69	0.846	2
Cl5-BZ#87	ND		ug/kg	1.69	0.846	2
Cl5-BZ#101	ND		ug/kg	1.69	0.846	2
Cl5-BZ#105	ND		ug/kg	1.69	0.846	2
Cl5-BZ#118	ND		ug/kg	1.69	0.846	2
Cl6-BZ#128	ND		ug/kg	1.69	0.846	2
Cl6-BZ#138	ND		ug/kg	1.69	0.846	2
Cl6-BZ#153	ND		ug/kg	1.69	0.846	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-17 D
 Client ID: MN COMPOSITE 1 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.69	0.846	2
Cl7-BZ#180	ND		ug/kg	1.69	0.846	2
Cl7-BZ#183	ND		ug/kg	1.69	0.846	2
Cl7-BZ#184	ND		ug/kg	1.69	0.846	2
Cl7-BZ#187	ND		ug/kg	1.69	0.846	2
Cl8-BZ#195	ND		ug/kg	1.69	0.846	2
Cl9-BZ#206	ND		ug/kg	1.69	0.846	2
Cl10-BZ#209	ND		ug/kg	1.69	0.846	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		30-150
Pyrene-d10	83		30-150
Benzo(b)fluoranthene-d12	81		30-150
DBOB	87		30-150
BZ 198	81		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-18 D
 Client ID: MN COMPOSITE 1 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 02:40
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.5	8.74	2
Acenaphthylene	ND		ug/kg	17.5	8.74	2
Acenaphthene	ND		ug/kg	17.5	8.74	2
Fluorene	ND		ug/kg	17.5	8.74	2
Phenanthrene	ND		ug/kg	17.5	8.74	2
Anthracene	ND		ug/kg	17.5	8.74	2
Fluoranthene	ND		ug/kg	17.5	8.74	2
Pyrene	ND		ug/kg	17.5	8.74	2
Benz(a)anthracene	ND		ug/kg	17.5	8.74	2
Chrysene	ND		ug/kg	17.5	8.74	2
Benzo(b)fluoranthene	ND		ug/kg	17.5	8.74	2
Benzo(k)fluoranthene	ND		ug/kg	17.5	8.74	2
Benzo(a)pyrene	ND		ug/kg	17.5	8.74	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.5	8.74	2
Dibenz(a,h)anthracene	ND		ug/kg	17.5	8.74	2
Benzo(ghi)perylene	ND		ug/kg	17.5	8.74	2
Cl2-BZ#8	ND		ug/kg	1.75	0.874	2
Cl3-BZ#18	ND		ug/kg	1.75	0.874	2
Cl3-BZ#28	ND		ug/kg	1.75	0.874	2
Cl4-BZ#44	ND		ug/kg	1.75	0.874	2
Cl4-BZ#49	ND		ug/kg	1.75	0.874	2
Cl4-BZ#52	ND		ug/kg	1.75	0.874	2
Cl4-BZ#66	ND		ug/kg	1.75	0.874	2
Cl5-BZ#87	ND		ug/kg	1.75	0.874	2
Cl5-BZ#101	ND		ug/kg	1.75	0.874	2
Cl5-BZ#105	ND		ug/kg	1.75	0.874	2
Cl5-BZ#118	ND		ug/kg	1.75	0.874	2
Cl6-BZ#128	ND		ug/kg	1.75	0.874	2
Cl6-BZ#138	ND		ug/kg	1.75	0.874	2
Cl6-BZ#153	ND		ug/kg	1.75	0.874	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-18 D
 Client ID: MN COMPOSITE 1 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.75	0.874	2
Cl7-BZ#180	ND		ug/kg	1.75	0.874	2
Cl7-BZ#183	ND		ug/kg	1.75	0.874	2
Cl7-BZ#184	ND		ug/kg	1.75	0.874	2
Cl7-BZ#187	ND		ug/kg	1.75	0.874	2
Cl8-BZ#195	ND		ug/kg	1.75	0.874	2
Cl9-BZ#206	ND		ug/kg	1.75	0.874	2
Cl10-BZ#209	ND		ug/kg	1.75	0.874	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	83		30-150
Pyrene-d10	87		30-150
Benzo(b)fluoranthene-d12	84		30-150
DBOB	90		30-150
BZ 198	89		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-19 D
 Client ID: MN COMPOSITE 1 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 03:12
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.0	9.52	2
Acenaphthylene	ND		ug/kg	19.0	9.52	2
Acenaphthene	ND		ug/kg	19.0	9.52	2
Fluorene	ND		ug/kg	19.0	9.52	2
Phenanthrene	ND		ug/kg	19.0	9.52	2
Anthracene	ND		ug/kg	19.0	9.52	2
Fluoranthene	ND		ug/kg	19.0	9.52	2
Pyrene	ND		ug/kg	19.0	9.52	2
Benz(a)anthracene	ND		ug/kg	19.0	9.52	2
Chrysene	ND		ug/kg	19.0	9.52	2
Benzo(b)fluoranthene	ND		ug/kg	19.0	9.52	2
Benzo(k)fluoranthene	ND		ug/kg	19.0	9.52	2
Benzo(a)pyrene	ND		ug/kg	19.0	9.52	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.0	9.52	2
Dibenz(a,h)anthracene	ND		ug/kg	19.0	9.52	2
Benzo(ghi)perylene	ND		ug/kg	19.0	9.52	2
Cl2-BZ#8	ND		ug/kg	1.90	0.952	2
Cl3-BZ#18	ND		ug/kg	1.90	0.952	2
Cl3-BZ#28	ND		ug/kg	1.90	0.952	2
Cl4-BZ#44	ND		ug/kg	1.90	0.952	2
Cl4-BZ#49	ND		ug/kg	1.90	0.952	2
Cl4-BZ#52	ND		ug/kg	1.90	0.952	2
Cl4-BZ#66	ND		ug/kg	1.90	0.952	2
Cl5-BZ#87	ND		ug/kg	1.90	0.952	2
Cl5-BZ#101	ND		ug/kg	1.90	0.952	2
Cl5-BZ#105	ND		ug/kg	1.90	0.952	2
Cl5-BZ#118	ND		ug/kg	1.90	0.952	2
Cl6-BZ#128	ND		ug/kg	1.90	0.952	2
Cl6-BZ#138	ND		ug/kg	1.90	0.952	2
Cl6-BZ#153	ND		ug/kg	1.90	0.952	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-19 D
 Client ID: MN COMPOSITE 1 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.90	0.952	2
Cl7-BZ#180	ND		ug/kg	1.90	0.952	2
Cl7-BZ#183	ND		ug/kg	1.90	0.952	2
Cl7-BZ#184	ND		ug/kg	1.90	0.952	2
Cl7-BZ#187	ND		ug/kg	1.90	0.952	2
Cl8-BZ#195	ND		ug/kg	1.90	0.952	2
Cl9-BZ#206	ND		ug/kg	1.90	0.952	2
Cl10-BZ#209	ND		ug/kg	1.90	0.952	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	71		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	73		30-150
DBOB	77		30-150
BZ 198	76		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-20 D
 Client ID: MN COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 03:45
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.34	2
Acenaphthylene	ND		ug/kg	18.7	9.34	2
Acenaphthene	ND		ug/kg	18.7	9.34	2
Fluorene	ND		ug/kg	18.7	9.34	2
Phenanthrene	ND		ug/kg	18.7	9.34	2
Anthracene	ND		ug/kg	18.7	9.34	2
Fluoranthene	ND		ug/kg	18.7	9.34	2
Pyrene	ND		ug/kg	18.7	9.34	2
Benz(a)anthracene	ND		ug/kg	18.7	9.34	2
Chrysene	ND		ug/kg	18.7	9.34	2
Benzo(b)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.34	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.34	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.34	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.34	2
Cl2-BZ#8	ND		ug/kg	1.87	0.934	2
Cl3-BZ#18	ND		ug/kg	1.87	0.934	2
Cl3-BZ#28	ND		ug/kg	1.87	0.934	2
Cl4-BZ#44	ND		ug/kg	1.87	0.934	2
Cl4-BZ#49	ND		ug/kg	1.87	0.934	2
Cl4-BZ#52	ND		ug/kg	1.87	0.934	2
Cl4-BZ#66	ND		ug/kg	1.87	0.934	2
Cl5-BZ#87	ND		ug/kg	1.87	0.934	2
Cl5-BZ#101	ND		ug/kg	1.87	0.934	2
Cl5-BZ#105	ND		ug/kg	1.87	0.934	2
Cl5-BZ#118	ND		ug/kg	1.87	0.934	2
Cl6-BZ#128	ND		ug/kg	1.87	0.934	2
Cl6-BZ#138	ND		ug/kg	1.87	0.934	2
Cl6-BZ#153	ND		ug/kg	1.87	0.934	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-20 D
 Client ID: MN COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.87	0.934	2
Cl7-BZ#180	ND		ug/kg	1.87	0.934	2
Cl7-BZ#183	ND		ug/kg	1.87	0.934	2
Cl7-BZ#184	ND		ug/kg	1.87	0.934	2
Cl7-BZ#187	ND		ug/kg	1.87	0.934	2
Cl8-BZ#195	ND		ug/kg	1.87	0.934	2
Cl9-BZ#206	ND		ug/kg	1.87	0.934	2
Cl10-BZ#209	ND		ug/kg	1.87	0.934	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	76		30-150
Pyrene-d10	80		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	81		30-150
BZ 198	82		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-21 D
 Client ID: MN COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 15:45
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.8	8.88	2
Acenaphthylene	ND		ug/kg	17.8	8.88	2
Acenaphthene	ND		ug/kg	17.8	8.88	2
Fluorene	ND		ug/kg	17.8	8.88	2
Phenanthrene	ND		ug/kg	17.8	8.88	2
Anthracene	ND		ug/kg	17.8	8.88	2
Fluoranthene	20.2		ug/kg	17.8	8.88	2
Pyrene	19.5		ug/kg	17.8	8.88	2
Benz(a)anthracene	ND		ug/kg	17.8	8.88	2
Chrysene	ND		ug/kg	17.8	8.88	2
Benzo(b)fluoranthene	ND		ug/kg	17.8	8.88	2
Benzo(k)fluoranthene	ND		ug/kg	17.8	8.88	2
Benzo(a)pyrene	ND		ug/kg	17.8	8.88	2
Indeno(1,2,3-cd)Pyrene	17.1	J	ug/kg	17.8	8.88	2
Dibenz(a,h)anthracene	ND		ug/kg	17.8	8.88	2
Benzo(ghi)perylene	ND		ug/kg	17.8	8.88	2
Cl2-BZ#8	ND		ug/kg	1.78	0.888	2
Cl3-BZ#18	ND		ug/kg	1.78	0.888	2
Cl3-BZ#28	ND		ug/kg	1.78	0.888	2
Cl4-BZ#44	ND		ug/kg	1.78	0.888	2
Cl4-BZ#49	ND		ug/kg	1.78	0.888	2
Cl4-BZ#52	ND		ug/kg	1.78	0.888	2
Cl4-BZ#66	ND		ug/kg	1.78	0.888	2
Cl5-BZ#87	ND		ug/kg	1.78	0.888	2
Cl5-BZ#101	2.01		ug/kg	1.78	0.888	2
Cl5-BZ#105	ND		ug/kg	1.78	0.888	2
Cl5-BZ#118	ND		ug/kg	1.78	0.888	2
Cl6-BZ#128	ND		ug/kg	1.78	0.888	2
Cl6-BZ#138	ND		ug/kg	1.78	0.888	2
Cl6-BZ#153	ND		ug/kg	1.78	0.888	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-21 D
 Client ID: MN COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.78	0.888	2
CI7-BZ#180	ND		ug/kg	1.78	0.888	2
CI7-BZ#183	ND		ug/kg	1.78	0.888	2
CI7-BZ#184	ND		ug/kg	1.78	0.888	2
CI7-BZ#187	ND		ug/kg	1.78	0.888	2
CI8-BZ#195	ND		ug/kg	1.78	0.888	2
CI9-BZ#206	ND		ug/kg	1.78	0.888	2
CI10-BZ#209	ND		ug/kg	1.78	0.888	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		30-150
Pyrene-d10	83		30-150
Benzo(b)fluoranthene-d12	79		30-150
DBOB	86		30-150
BZ 198	83		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-22 D
 Client ID: MN COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 18:53
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.42	2
Acenaphthylene	ND		ug/kg	18.8	9.42	2
Acenaphthene	ND		ug/kg	18.8	9.42	2
Fluorene	ND		ug/kg	18.8	9.42	2
Phenanthrene	ND		ug/kg	18.8	9.42	2
Anthracene	ND		ug/kg	18.8	9.42	2
Fluoranthene	20.1		ug/kg	18.8	9.42	2
Pyrene	20.6		ug/kg	18.8	9.42	2
Benz(a)anthracene	10.2	J	ug/kg	18.8	9.42	2
Chrysene	ND		ug/kg	18.8	9.42	2
Benzo(b)fluoranthene	ND		ug/kg	18.8	9.42	2
Benzo(k)fluoranthene	ND		ug/kg	18.8	9.42	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.42	2
Indeno(1,2,3-cd)Pyrene	18.2	J	ug/kg	18.8	9.42	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.42	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.42	2
Cl2-BZ#8	ND		ug/kg	1.88	0.942	2
Cl3-BZ#18	ND		ug/kg	1.88	0.942	2
Cl3-BZ#28	ND		ug/kg	1.88	0.942	2
Cl4-BZ#44	ND		ug/kg	1.88	0.942	2
Cl4-BZ#49	ND		ug/kg	1.88	0.942	2
Cl4-BZ#52	1.10	J	ug/kg	1.88	0.942	2
Cl4-BZ#66	ND		ug/kg	1.88	0.942	2
Cl5-BZ#87	ND		ug/kg	1.88	0.942	2
Cl5-BZ#101	ND		ug/kg	1.88	0.942	2
Cl5-BZ#105	ND		ug/kg	1.88	0.942	2
Cl5-BZ#118	ND		ug/kg	1.88	0.942	2
Cl6-BZ#128	ND		ug/kg	1.88	0.942	2
Cl6-BZ#138	ND		ug/kg	1.88	0.942	2
Cl6-BZ#153	ND		ug/kg	1.88	0.942	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-22 D
 Client ID: MN COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.88	0.942	2
CI7-BZ#180	ND		ug/kg	1.88	0.942	2
CI7-BZ#183	ND		ug/kg	1.88	0.942	2
CI7-BZ#184	ND		ug/kg	1.88	0.942	2
CI7-BZ#187	ND		ug/kg	1.88	0.942	2
CI8-BZ#195	ND		ug/kg	1.88	0.942	2
CI9-BZ#206	ND		ug/kg	1.88	0.942	2
CI10-BZ#209	ND		ug/kg	1.88	0.942	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	68		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-23 D
 Client ID: MN COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 19:25
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.4	8.71	2
Acenaphthylene	ND		ug/kg	17.4	8.71	2
Acenaphthene	ND		ug/kg	17.4	8.71	2
Fluorene	ND		ug/kg	17.4	8.71	2
Phenanthrene	ND		ug/kg	17.4	8.71	2
Anthracene	ND		ug/kg	17.4	8.71	2
Fluoranthene	16.8	J	ug/kg	17.4	8.71	2
Pyrene	17.5		ug/kg	17.4	8.71	2
Benz(a)anthracene	ND		ug/kg	17.4	8.71	2
Chrysene	ND		ug/kg	17.4	8.71	2
Benzo(b)fluoranthene	ND		ug/kg	17.4	8.71	2
Benzo(k)fluoranthene	ND		ug/kg	17.4	8.71	2
Benzo(a)pyrene	ND		ug/kg	17.4	8.71	2
Indeno(1,2,3-cd)Pyrene	17.1	J	ug/kg	17.4	8.71	2
Dibenz(a,h)anthracene	ND		ug/kg	17.4	8.71	2
Benzo(ghi)perylene	ND		ug/kg	17.4	8.71	2
Cl2-BZ#8	ND		ug/kg	1.74	0.871	2
Cl3-BZ#18	ND		ug/kg	1.74	0.871	2
Cl3-BZ#28	ND		ug/kg	1.74	0.871	2
Cl4-BZ#44	ND		ug/kg	1.74	0.871	2
Cl4-BZ#49	ND		ug/kg	1.74	0.871	2
Cl4-BZ#52	0.878	J	ug/kg	1.74	0.871	2
Cl4-BZ#66	ND		ug/kg	1.74	0.871	2
Cl5-BZ#87	ND		ug/kg	1.74	0.871	2
Cl5-BZ#101	1.62	J	ug/kg	1.74	0.871	2
Cl5-BZ#105	ND		ug/kg	1.74	0.871	2
Cl5-BZ#118	ND		ug/kg	1.74	0.871	2
Cl6-BZ#128	ND		ug/kg	1.74	0.871	2
Cl6-BZ#138	ND		ug/kg	1.74	0.871	2
Cl6-BZ#153	ND		ug/kg	1.74	0.871	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-23 D
 Client ID: MN COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.74	0.871	2
Cl7-BZ#180	ND		ug/kg	1.74	0.871	2
Cl7-BZ#183	ND		ug/kg	1.74	0.871	2
Cl7-BZ#184	ND		ug/kg	1.74	0.871	2
Cl7-BZ#187	ND		ug/kg	1.74	0.871	2
Cl8-BZ#195	ND		ug/kg	1.74	0.871	2
Cl9-BZ#206	ND		ug/kg	1.74	0.871	2
Cl10-BZ#209	ND		ug/kg	1.74	0.871	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	51		30-150
Pyrene-d10	55		30-150
Benzo(b)fluoranthene-d12	52		30-150
DBOB	55		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-24 D
 Client ID: MN COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 19:58
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.4	9.73	2
Acenaphthylene	ND		ug/kg	19.4	9.73	2
Acenaphthene	ND		ug/kg	19.4	9.73	2
Fluorene	ND		ug/kg	19.4	9.73	2
Phenanthrene	ND		ug/kg	19.4	9.73	2
Anthracene	ND		ug/kg	19.4	9.73	2
Fluoranthene	23.5		ug/kg	19.4	9.73	2
Pyrene	24.4		ug/kg	19.4	9.73	2
Benz(a)anthracene	10.2	J	ug/kg	19.4	9.73	2
Chrysene	10.1	J	ug/kg	19.4	9.73	2
Benzo(b)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(k)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(a)pyrene	ND		ug/kg	19.4	9.73	2
Indeno(1,2,3-cd)Pyrene	19.0	J	ug/kg	19.4	9.73	2
Dibenz(a,h)anthracene	ND		ug/kg	19.4	9.73	2
Benzo(ghi)perylene	ND		ug/kg	19.4	9.73	2
Cl2-BZ#8	ND		ug/kg	1.94	0.973	2
Cl3-BZ#18	ND		ug/kg	1.94	0.973	2
Cl3-BZ#28	ND		ug/kg	1.94	0.973	2
Cl4-BZ#44	ND		ug/kg	1.94	0.973	2
Cl4-BZ#49	ND		ug/kg	1.94	0.973	2
Cl4-BZ#52	ND		ug/kg	1.94	0.973	2
Cl4-BZ#66	ND		ug/kg	1.94	0.973	2
Cl5-BZ#87	ND		ug/kg	1.94	0.973	2
Cl5-BZ#101	1.96		ug/kg	1.94	0.973	2
Cl5-BZ#105	ND		ug/kg	1.94	0.973	2
Cl5-BZ#118	ND		ug/kg	1.94	0.973	2
Cl6-BZ#128	ND		ug/kg	1.94	0.973	2
Cl6-BZ#138	ND		ug/kg	1.94	0.973	2
Cl6-BZ#153	ND		ug/kg	1.94	0.973	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-24 D
 Client ID: MN COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.94	0.973	2
CI7-BZ#180	ND		ug/kg	1.94	0.973	2
CI7-BZ#183	ND		ug/kg	1.94	0.973	2
CI7-BZ#184	ND		ug/kg	1.94	0.973	2
CI7-BZ#187	ND		ug/kg	1.94	0.973	2
CI8-BZ#195	ND		ug/kg	1.94	0.973	2
CI9-BZ#206	ND		ug/kg	1.94	0.973	2
CI10-BZ#209	ND		ug/kg	1.94	0.973	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	66		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-25 D
 Client ID: MN COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 20:30
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.6	8.79	2
Acenaphthylene	ND		ug/kg	17.6	8.79	2
Acenaphthene	ND		ug/kg	17.6	8.79	2
Fluorene	ND		ug/kg	17.6	8.79	2
Phenanthrene	13.1	J	ug/kg	17.6	8.79	2
Anthracene	ND		ug/kg	17.6	8.79	2
Fluoranthene	36.9		ug/kg	17.6	8.79	2
Pyrene	36.8		ug/kg	17.6	8.79	2
Benz(a)anthracene	28.3		ug/kg	17.6	8.79	2
Chrysene	16.9	J	ug/kg	17.6	8.79	2
Benzo(b)fluoranthene	15.4	J	ug/kg	17.6	8.79	2
Benzo(k)fluoranthene	9.21	J	ug/kg	17.6	8.79	2
Benzo(a)pyrene	9.64	J	ug/kg	17.6	8.79	2
Indeno(1,2,3-cd)Pyrene	20.0		ug/kg	17.6	8.79	2
Dibenz(a,h)anthracene	ND		ug/kg	17.6	8.79	2
Benzo(ghi)perylene	ND		ug/kg	17.6	8.79	2
Cl2-BZ#8	ND		ug/kg	1.76	0.879	2
Cl3-BZ#18	ND		ug/kg	1.76	0.879	2
Cl3-BZ#28	ND		ug/kg	1.76	0.879	2
Cl4-BZ#44	2.65		ug/kg	1.76	0.879	2
Cl4-BZ#49	ND		ug/kg	1.76	0.879	2
Cl4-BZ#52	1.06	J	ug/kg	1.76	0.879	2
Cl4-BZ#66	ND		ug/kg	1.76	0.879	2
Cl5-BZ#87	ND		ug/kg	1.76	0.879	2
Cl5-BZ#101	2.68		ug/kg	1.76	0.879	2
Cl5-BZ#105	ND		ug/kg	1.76	0.879	2
Cl5-BZ#118	ND		ug/kg	1.76	0.879	2
Cl6-BZ#128	ND		ug/kg	1.76	0.879	2
Cl6-BZ#138	ND		ug/kg	1.76	0.879	2
Cl6-BZ#153	ND		ug/kg	1.76	0.879	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-25 D
 Client ID: MN COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.76	0.879	2
CI7-BZ#180	ND		ug/kg	1.76	0.879	2
CI7-BZ#183	ND		ug/kg	1.76	0.879	2
CI7-BZ#184	ND		ug/kg	1.76	0.879	2
CI7-BZ#187	ND		ug/kg	1.76	0.879	2
CI8-BZ#195	ND		ug/kg	1.76	0.879	2
CI9-BZ#206	ND		ug/kg	1.76	0.879	2
CI10-BZ#209	ND		ug/kg	1.76	0.879	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	73		30-150
DBOB	73		30-150
BZ 198	69		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-26 D
 Client ID: MN COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 21:01
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.42	2
Acenaphthylene	ND		ug/kg	18.8	9.42	2
Acenaphthene	ND		ug/kg	18.8	9.42	2
Fluorene	ND		ug/kg	18.8	9.42	2
Phenanthrene	ND		ug/kg	18.8	9.42	2
Anthracene	ND		ug/kg	18.8	9.42	2
Fluoranthene	ND		ug/kg	18.8	9.42	2
Pyrene	ND		ug/kg	18.8	9.42	2
Benz(a)anthracene	ND		ug/kg	18.8	9.42	2
Chrysene	ND		ug/kg	18.8	9.42	2
Benzo(b)fluoranthene	ND		ug/kg	18.8	9.42	2
Benzo(k)fluoranthene	ND		ug/kg	18.8	9.42	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.42	2
Indeno(1,2,3-cd)Pyrene	16.8	J	ug/kg	18.8	9.42	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.42	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.42	2
Cl2-BZ#8	ND		ug/kg	1.88	0.942	2
Cl3-BZ#18	ND		ug/kg	1.88	0.942	2
Cl3-BZ#28	ND		ug/kg	1.88	0.942	2
Cl4-BZ#44	2.06		ug/kg	1.88	0.942	2
Cl4-BZ#49	ND		ug/kg	1.88	0.942	2
Cl4-BZ#52	ND		ug/kg	1.88	0.942	2
Cl4-BZ#66	ND		ug/kg	1.88	0.942	2
Cl5-BZ#87	ND		ug/kg	1.88	0.942	2
Cl5-BZ#101	1.80	J	ug/kg	1.88	0.942	2
Cl5-BZ#105	ND		ug/kg	1.88	0.942	2
Cl5-BZ#118	ND		ug/kg	1.88	0.942	2
Cl6-BZ#128	ND		ug/kg	1.88	0.942	2
Cl6-BZ#138	ND		ug/kg	1.88	0.942	2
Cl6-BZ#153	ND		ug/kg	1.88	0.942	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-26 D
 Client ID: MN COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.88	0.942	2
CI7-BZ#180	ND		ug/kg	1.88	0.942	2
CI7-BZ#183	ND		ug/kg	1.88	0.942	2
CI7-BZ#184	ND		ug/kg	1.88	0.942	2
CI7-BZ#187	ND		ug/kg	1.88	0.942	2
CI8-BZ#195	ND		ug/kg	1.88	0.942	2
CI9-BZ#206	ND		ug/kg	1.88	0.942	2
CI10-BZ#209	ND		ug/kg	1.88	0.942	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	64		30-150
Pyrene-d10	74		30-150
Benzo(b)fluoranthene-d12	72		30-150
DBOB	72		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-27 D
 Client ID: MN COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 19:00

Analytical Date: 11/03/17 21:33

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.2	9.09	2
Acenaphthylene	ND		ug/kg	18.2	9.09	2
Acenaphthene	ND		ug/kg	18.2	9.09	2
Fluorene	ND		ug/kg	18.2	9.09	2
Phenanthrene	ND		ug/kg	18.2	9.09	2
Anthracene	ND		ug/kg	18.2	9.09	2
Fluoranthene	10.2	J	ug/kg	18.2	9.09	2
Pyrene	10.0	J	ug/kg	18.2	9.09	2
Benz(a)anthracene	12.0	J	ug/kg	18.2	9.09	2
Chrysene	ND		ug/kg	18.2	9.09	2
Benzo(b)fluoranthene	ND		ug/kg	18.2	9.09	2
Benzo(k)fluoranthene	ND		ug/kg	18.2	9.09	2
Benzo(a)pyrene	ND		ug/kg	18.2	9.09	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.2	9.09	2
Dibenz(a,h)anthracene	ND		ug/kg	18.2	9.09	2
Benzo(ghi)perylene	ND		ug/kg	18.2	9.09	2
Cl2-BZ#8	ND		ug/kg	1.82	0.909	2
Cl3-BZ#18	ND		ug/kg	1.82	0.909	2
Cl3-BZ#28	ND		ug/kg	1.82	0.909	2
Cl4-BZ#44	2.35		ug/kg	1.82	0.909	2
Cl4-BZ#49	ND		ug/kg	1.82	0.909	2
Cl4-BZ#52	ND		ug/kg	1.82	0.909	2
Cl4-BZ#66	ND		ug/kg	1.82	0.909	2
Cl5-BZ#87	ND		ug/kg	1.82	0.909	2
Cl5-BZ#101	2.23		ug/kg	1.82	0.909	2
Cl5-BZ#105	ND		ug/kg	1.82	0.909	2
Cl5-BZ#118	ND		ug/kg	1.82	0.909	2
Cl6-BZ#128	ND		ug/kg	1.82	0.909	2
Cl6-BZ#138	ND		ug/kg	1.82	0.909	2
Cl6-BZ#153	ND		ug/kg	1.82	0.909	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-27 D
 Client ID: MN COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.82	0.909	2
CI7-BZ#180	ND		ug/kg	1.82	0.909	2
CI7-BZ#183	ND		ug/kg	1.82	0.909	2
CI7-BZ#184	ND		ug/kg	1.82	0.909	2
CI7-BZ#187	ND		ug/kg	1.82	0.909	2
CI8-BZ#195	ND		ug/kg	1.82	0.909	2
CI9-BZ#206	ND		ug/kg	1.82	0.909	2
CI10-BZ#209	ND		ug/kg	1.82	0.909	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	68		30-150
Pyrene-d10	75		30-150
Benzo(b)fluoranthene-d12	72		30-150
DBOB	76		30-150
BZ 198	73		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-28 D
 Client ID: MN COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 22:05
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.47	2
Acenaphthylene	ND		ug/kg	16.9	8.47	2
Acenaphthene	ND		ug/kg	16.9	8.47	2
Fluorene	ND		ug/kg	16.9	8.47	2
Phenanthrene	ND		ug/kg	16.9	8.47	2
Anthracene	ND		ug/kg	16.9	8.47	2
Fluoranthene	13.0	J	ug/kg	16.9	8.47	2
Pyrene	12.8	J	ug/kg	16.9	8.47	2
Benz(a)anthracene	9.55	J	ug/kg	16.9	8.47	2
Chrysene	ND		ug/kg	16.9	8.47	2
Benzo(b)fluoranthene	ND		ug/kg	16.9	8.47	2
Benzo(k)fluoranthene	ND		ug/kg	16.9	8.47	2
Benzo(a)pyrene	ND		ug/kg	16.9	8.47	2
Indeno(1,2,3-cd)Pyrene	16.2	J	ug/kg	16.9	8.47	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.47	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.47	2
Cl2-BZ#8	ND		ug/kg	1.69	0.847	2
Cl3-BZ#18	ND		ug/kg	1.69	0.847	2
Cl3-BZ#28	ND		ug/kg	1.69	0.847	2
Cl4-BZ#44	1.73		ug/kg	1.69	0.847	2
Cl4-BZ#49	ND		ug/kg	1.69	0.847	2
Cl4-BZ#52	ND		ug/kg	1.69	0.847	2
Cl4-BZ#66	ND		ug/kg	1.69	0.847	2
Cl5-BZ#87	ND		ug/kg	1.69	0.847	2
Cl5-BZ#101	1.93		ug/kg	1.69	0.847	2
Cl5-BZ#105	ND		ug/kg	1.69	0.847	2
Cl5-BZ#118	ND		ug/kg	1.69	0.847	2
Cl6-BZ#128	ND		ug/kg	1.69	0.847	2
Cl6-BZ#138	ND		ug/kg	1.69	0.847	2
Cl6-BZ#153	ND		ug/kg	1.69	0.847	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-28 D
 Client ID: MN COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.69	0.847	2
CI7-BZ#180	ND		ug/kg	1.69	0.847	2
CI7-BZ#183	ND		ug/kg	1.69	0.847	2
CI7-BZ#184	ND		ug/kg	1.69	0.847	2
CI7-BZ#187	ND		ug/kg	1.69	0.847	2
CI8-BZ#195	ND		ug/kg	1.69	0.847	2
CI9-BZ#206	ND		ug/kg	1.69	0.847	2
CI10-BZ#209	ND		ug/kg	1.69	0.847	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	66		30-150
DBOB	69		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-29 D
 Client ID: MN COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 22:37
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.8	9.92	2
Acenaphthylene	ND		ug/kg	19.8	9.92	2
Acenaphthene	ND		ug/kg	19.8	9.92	2
Fluorene	ND		ug/kg	19.8	9.92	2
Phenanthrene	ND		ug/kg	19.8	9.92	2
Anthracene	ND		ug/kg	19.8	9.92	2
Fluoranthene	12.7	J	ug/kg	19.8	9.92	2
Pyrene	12.6	J	ug/kg	19.8	9.92	2
Benz(a)anthracene	ND		ug/kg	19.8	9.92	2
Chrysene	ND		ug/kg	19.8	9.92	2
Benzo(b)fluoranthene	ND		ug/kg	19.8	9.92	2
Benzo(k)fluoranthene	ND		ug/kg	19.8	9.92	2
Benzo(a)pyrene	ND		ug/kg	19.8	9.92	2
Indeno(1,2,3-cd)Pyrene	18.0	J	ug/kg	19.8	9.92	2
Dibenz(a,h)anthracene	ND		ug/kg	19.8	9.92	2
Benzo(ghi)perylene	ND		ug/kg	19.8	9.92	2
Cl2-BZ#8	ND		ug/kg	1.98	0.992	2
Cl3-BZ#18	ND		ug/kg	1.98	0.992	2
Cl3-BZ#28	ND		ug/kg	1.98	0.992	2
Cl4-BZ#44	2.27		ug/kg	1.98	0.992	2
Cl4-BZ#49	ND		ug/kg	1.98	0.992	2
Cl4-BZ#52	ND		ug/kg	1.98	0.992	2
Cl4-BZ#66	ND		ug/kg	1.98	0.992	2
Cl5-BZ#87	ND		ug/kg	1.98	0.992	2
Cl5-BZ#101	2.16		ug/kg	1.98	0.992	2
Cl5-BZ#105	ND		ug/kg	1.98	0.992	2
Cl5-BZ#118	ND		ug/kg	1.98	0.992	2
Cl6-BZ#128	ND		ug/kg	1.98	0.992	2
Cl6-BZ#138	ND		ug/kg	1.98	0.992	2
Cl6-BZ#153	ND		ug/kg	1.98	0.992	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-29 D
 Client ID: MN COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.98	0.992	2
Cl7-BZ#180	ND		ug/kg	1.98	0.992	2
Cl7-BZ#183	ND		ug/kg	1.98	0.992	2
Cl7-BZ#184	ND		ug/kg	1.98	0.992	2
Cl7-BZ#187	ND		ug/kg	1.98	0.992	2
Cl8-BZ#195	ND		ug/kg	1.98	0.992	2
Cl9-BZ#206	ND		ug/kg	1.98	0.992	2
Cl10-BZ#209	ND		ug/kg	1.98	0.992	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	71		30-150
BZ 198	72		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-30 D
 Client ID: MN COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 23:08
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.38	2
Acenaphthylene	ND		ug/kg	18.8	9.38	2
Acenaphthene	ND		ug/kg	18.8	9.38	2
Fluorene	ND		ug/kg	18.8	9.38	2
Phenanthrene	ND		ug/kg	18.8	9.38	2
Anthracene	ND		ug/kg	18.8	9.38	2
Fluoranthene	13.5	J	ug/kg	18.8	9.38	2
Pyrene	11.4	J	ug/kg	18.8	9.38	2
Benz(a)anthracene	15.3	J	ug/kg	18.8	9.38	2
Chrysene	ND		ug/kg	18.8	9.38	2
Benzo(b)fluoranthene	ND		ug/kg	18.8	9.38	2
Benzo(k)fluoranthene	ND		ug/kg	18.8	9.38	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.38	2
Indeno(1,2,3-cd)Pyrene	17.4	J	ug/kg	18.8	9.38	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.38	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.38	2
Cl2-BZ#8	ND		ug/kg	1.88	0.938	2
Cl3-BZ#18	ND		ug/kg	1.88	0.938	2
Cl3-BZ#28	ND		ug/kg	1.88	0.938	2
Cl4-BZ#44	2.41		ug/kg	1.88	0.938	2
Cl4-BZ#49	ND		ug/kg	1.88	0.938	2
Cl4-BZ#52	ND		ug/kg	1.88	0.938	2
Cl4-BZ#66	ND		ug/kg	1.88	0.938	2
Cl5-BZ#87	ND		ug/kg	1.88	0.938	2
Cl5-BZ#101	1.60	J	ug/kg	1.88	0.938	2
Cl5-BZ#105	ND		ug/kg	1.88	0.938	2
Cl5-BZ#118	ND		ug/kg	1.88	0.938	2
Cl6-BZ#128	ND		ug/kg	1.88	0.938	2
Cl6-BZ#138	ND		ug/kg	1.88	0.938	2
Cl6-BZ#153	ND		ug/kg	1.88	0.938	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-30 D
 Client ID: MN COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.88	0.938	2
CI7-BZ#180	ND		ug/kg	1.88	0.938	2
CI7-BZ#183	ND		ug/kg	1.88	0.938	2
CI7-BZ#184	ND		ug/kg	1.88	0.938	2
CI7-BZ#187	ND		ug/kg	1.88	0.938	2
CI8-BZ#195	ND		ug/kg	1.88	0.938	2
CI9-BZ#206	ND		ug/kg	1.88	0.938	2
CI10-BZ#209	ND		ug/kg	1.88	0.938	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	66		30-150
DBOB	68		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-31 D
 Client ID: MN COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 23:40
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.46	2
Acenaphthylene	ND		ug/kg	16.9	8.46	2
Acenaphthene	ND		ug/kg	16.9	8.46	2
Fluorene	ND		ug/kg	16.9	8.46	2
Phenanthrene	ND		ug/kg	16.9	8.46	2
Anthracene	ND		ug/kg	16.9	8.46	2
Fluoranthene	46.6		ug/kg	16.9	8.46	2
Pyrene	54.8		ug/kg	16.9	8.46	2
Benz(a)anthracene	31.7		ug/kg	16.9	8.46	2
Chrysene	24.8		ug/kg	16.9	8.46	2
Benzo(b)fluoranthene	21.3		ug/kg	16.9	8.46	2
Benzo(k)fluoranthene	12.3	J	ug/kg	16.9	8.46	2
Benzo(a)pyrene	13.5	J	ug/kg	16.9	8.46	2
Indeno(1,2,3-cd)Pyrene	19.9		ug/kg	16.9	8.46	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.46	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.46	2
Cl2-BZ#8	ND		ug/kg	1.69	0.846	2
Cl3-BZ#18	ND		ug/kg	1.69	0.846	2
Cl3-BZ#28	ND		ug/kg	1.69	0.846	2
Cl4-BZ#44	2.12		ug/kg	1.69	0.846	2
Cl4-BZ#49	ND		ug/kg	1.69	0.846	2
Cl4-BZ#52	0.865	J	ug/kg	1.69	0.846	2
Cl4-BZ#66	ND		ug/kg	1.69	0.846	2
Cl5-BZ#87	ND		ug/kg	1.69	0.846	2
Cl5-BZ#101	2.38		ug/kg	1.69	0.846	2
Cl5-BZ#105	ND		ug/kg	1.69	0.846	2
Cl5-BZ#118	ND		ug/kg	1.69	0.846	2
Cl6-BZ#128	ND		ug/kg	1.69	0.846	2
Cl6-BZ#138	ND		ug/kg	1.69	0.846	2
Cl6-BZ#153	0.897	J	ug/kg	1.69	0.846	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-31 D
 Client ID: MN COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.69	0.846	2
CI7-BZ#180	ND		ug/kg	1.69	0.846	2
CI7-BZ#183	ND		ug/kg	1.69	0.846	2
CI7-BZ#184	ND		ug/kg	1.69	0.846	2
CI7-BZ#187	ND		ug/kg	1.69	0.846	2
CI8-BZ#195	ND		ug/kg	1.69	0.846	2
CI9-BZ#206	ND		ug/kg	1.69	0.846	2
CI10-BZ#209	ND		ug/kg	1.69	0.846	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	67		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-32 D
 Client ID: MN COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 00:12
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.5	8.74	2
Acenaphthylene	ND		ug/kg	17.5	8.74	2
Acenaphthene	ND		ug/kg	17.5	8.74	2
Fluorene	ND		ug/kg	17.5	8.74	2
Phenanthrene	9.23	J	ug/kg	17.5	8.74	2
Anthracene	ND		ug/kg	17.5	8.74	2
Fluoranthene	57.4		ug/kg	17.5	8.74	2
Pyrene	59.8		ug/kg	17.5	8.74	2
Benz(a)anthracene	36.8		ug/kg	17.5	8.74	2
Chrysene	29.6		ug/kg	17.5	8.74	2
Benzo(b)fluoranthene	25.9		ug/kg	17.5	8.74	2
Benzo(k)fluoranthene	16.1	J	ug/kg	17.5	8.74	2
Benzo(a)pyrene	16.4	J	ug/kg	17.5	8.74	2
Indeno(1,2,3-cd)Pyrene	21.7		ug/kg	17.5	8.74	2
Dibenz(a,h)anthracene	ND		ug/kg	17.5	8.74	2
Benzo(ghi)perylene	ND		ug/kg	17.5	8.74	2
Cl2-BZ#8	ND		ug/kg	1.75	0.874	2
Cl3-BZ#18	ND		ug/kg	1.75	0.874	2
Cl3-BZ#28	ND		ug/kg	1.75	0.874	2
Cl4-BZ#44	2.58		ug/kg	1.75	0.874	2
Cl4-BZ#49	ND		ug/kg	1.75	0.874	2
Cl4-BZ#52	ND		ug/kg	1.75	0.874	2
Cl4-BZ#66	ND		ug/kg	1.75	0.874	2
Cl5-BZ#87	ND		ug/kg	1.75	0.874	2
Cl5-BZ#101	2.98		ug/kg	1.75	0.874	2
Cl5-BZ#105	ND		ug/kg	1.75	0.874	2
Cl5-BZ#118	0.968	J	ug/kg	1.75	0.874	2
Cl6-BZ#128	ND		ug/kg	1.75	0.874	2
Cl6-BZ#138	1.22	J	ug/kg	1.75	0.874	2
Cl6-BZ#153	1.14	J	ug/kg	1.75	0.874	2

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-32 D
 Client ID: MN COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.75	0.874	2
CI7-BZ#180	ND		ug/kg	1.75	0.874	2
CI7-BZ#183	ND		ug/kg	1.75	0.874	2
CI7-BZ#184	ND		ug/kg	1.75	0.874	2
CI7-BZ#187	ND		ug/kg	1.75	0.874	2
CI8-BZ#195	ND		ug/kg	1.75	0.874	2
CI9-BZ#206	ND		ug/kg	1.75	0.874	2
CI10-BZ#209	ND		ug/kg	1.75	0.874	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	72		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-33 D
 Client ID: MN COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 19:00

Analytical Date: 11/04/17 00:43

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.42	2
Acenaphthylene	ND		ug/kg	18.8	9.42	2
Acenaphthene	ND		ug/kg	18.8	9.42	2
Fluorene	ND		ug/kg	18.8	9.42	2
Phenanthrene	ND		ug/kg	18.8	9.42	2
Anthracene	ND		ug/kg	18.8	9.42	2
Fluoranthene	35.9		ug/kg	18.8	9.42	2
Pyrene	41.0		ug/kg	18.8	9.42	2
Benz(a)anthracene	26.7		ug/kg	18.8	9.42	2
Chrysene	17.2	J	ug/kg	18.8	9.42	2
Benzo(b)fluoranthene	15.1	J	ug/kg	18.8	9.42	2
Benzo(k)fluoranthene	9.69	J	ug/kg	18.8	9.42	2
Benzo(a)pyrene	ND		ug/kg	18.8	9.42	2
Indeno(1,2,3-cd)Pyrene	19.2		ug/kg	18.8	9.42	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.42	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.42	2
Cl2-BZ#8	ND		ug/kg	1.88	0.942	2
Cl3-BZ#18	ND		ug/kg	1.88	0.942	2
Cl3-BZ#28	ND		ug/kg	1.88	0.942	2
Cl4-BZ#44	2.89		ug/kg	1.88	0.942	2
Cl4-BZ#49	ND		ug/kg	1.88	0.942	2
Cl4-BZ#52	0.958	J	ug/kg	1.88	0.942	2
Cl4-BZ#66	0.970	J	ug/kg	1.88	0.942	2
Cl5-BZ#87	ND		ug/kg	1.88	0.942	2
Cl5-BZ#101	2.39		ug/kg	1.88	0.942	2
Cl5-BZ#105	ND		ug/kg	1.88	0.942	2
Cl5-BZ#118	ND		ug/kg	1.88	0.942	2
Cl6-BZ#128	ND		ug/kg	1.88	0.942	2
Cl6-BZ#138	ND		ug/kg	1.88	0.942	2
Cl6-BZ#153	ND		ug/kg	1.88	0.942	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-33 D
 Client ID: MN COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.88	0.942	2
Cl7-BZ#180	ND		ug/kg	1.88	0.942	2
Cl7-BZ#183	ND		ug/kg	1.88	0.942	2
Cl7-BZ#184	ND		ug/kg	1.88	0.942	2
Cl7-BZ#187	ND		ug/kg	1.88	0.942	2
Cl8-BZ#195	ND		ug/kg	1.88	0.942	2
Cl9-BZ#206	ND		ug/kg	1.88	0.942	2
Cl10-BZ#209	ND		ug/kg	1.88	0.942	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	73		30-150
Benzo(b)fluoranthene-d12	70		30-150
DBOB	70		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-34 D
 Client ID: MN COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 19:00

Analytical Date: 11/04/17 01:15

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.46	2
Acenaphthylene	ND		ug/kg	16.9	8.46	2
Acenaphthene	ND		ug/kg	16.9	8.46	2
Fluorene	ND		ug/kg	16.9	8.46	2
Phenanthrene	13.0	J	ug/kg	16.9	8.46	2
Anthracene	ND		ug/kg	16.9	8.46	2
Fluoranthene	77.2		ug/kg	16.9	8.46	2
Pyrene	87.3		ug/kg	16.9	8.46	2
Benz(a)anthracene	42.2		ug/kg	16.9	8.46	2
Chrysene	35.2		ug/kg	16.9	8.46	2
Benzo(b)fluoranthene	30.4		ug/kg	16.9	8.46	2
Benzo(k)fluoranthene	17.3		ug/kg	16.9	8.46	2
Benzo(a)pyrene	20.0		ug/kg	16.9	8.46	2
Indeno(1,2,3-cd)Pyrene	23.1		ug/kg	16.9	8.46	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.46	2
Benzo(ghi)perylene	10.4	J	ug/kg	16.9	8.46	2
Cl2-BZ#8	ND		ug/kg	1.69	0.846	2
Cl3-BZ#18	ND		ug/kg	1.69	0.846	2
Cl3-BZ#28	ND		ug/kg	1.69	0.846	2
Cl4-BZ#44	3.48		ug/kg	1.69	0.846	2
Cl4-BZ#49	ND		ug/kg	1.69	0.846	2
Cl4-BZ#52	ND		ug/kg	1.69	0.846	2
Cl4-BZ#66	ND		ug/kg	1.69	0.846	2
Cl5-BZ#87	ND		ug/kg	1.69	0.846	2
Cl5-BZ#101	3.21		ug/kg	1.69	0.846	2
Cl5-BZ#105	ND		ug/kg	1.69	0.846	2
Cl5-BZ#118	0.997	J	ug/kg	1.69	0.846	2
Cl6-BZ#128	ND		ug/kg	1.69	0.846	2
Cl6-BZ#138	1.14	J	ug/kg	1.69	0.846	2
Cl6-BZ#153	1.21	J	ug/kg	1.69	0.846	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-34 D
 Client ID: MN COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.69	0.846	2
Cl7-BZ#180	ND		ug/kg	1.69	0.846	2
Cl7-BZ#183	ND		ug/kg	1.69	0.846	2
Cl7-BZ#184	ND		ug/kg	1.69	0.846	2
Cl7-BZ#187	ND		ug/kg	1.69	0.846	2
Cl8-BZ#195	ND		ug/kg	1.69	0.846	2
Cl9-BZ#206	ND		ug/kg	1.69	0.846	2
Cl10-BZ#209	ND		ug/kg	1.69	0.846	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	68		30-150
Pyrene-d10	77		30-150
Benzo(b)fluoranthene-d12	74		30-150
DBOB	77		30-150
BZ 198	75		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-35 D
 Client ID: MN COMPOSITE 4 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 01:47
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.7	9.86	2
Acenaphthylene	ND		ug/kg	19.7	9.86	2
Acenaphthene	ND		ug/kg	19.7	9.86	2
Fluorene	ND		ug/kg	19.7	9.86	2
Phenanthrene	ND		ug/kg	19.7	9.86	2
Anthracene	ND		ug/kg	19.7	9.86	2
Fluoranthene	64.5		ug/kg	19.7	9.86	2
Pyrene	73.3		ug/kg	19.7	9.86	2
Benz(a)anthracene	44.0		ug/kg	19.7	9.86	2
Chrysene	37.7		ug/kg	19.7	9.86	2
Benzo(b)fluoranthene	31.4		ug/kg	19.7	9.86	2
Benzo(k)fluoranthene	18.7	J	ug/kg	19.7	9.86	2
Benzo(a)pyrene	21.5		ug/kg	19.7	9.86	2
Indeno(1,2,3-cd)Pyrene	25.5		ug/kg	19.7	9.86	2
Dibenz(a,h)anthracene	ND		ug/kg	19.7	9.86	2
Benzo(ghi)perylene	10.5	J	ug/kg	19.7	9.86	2
Cl2-BZ#8	ND		ug/kg	1.97	0.986	2
Cl3-BZ#18	ND		ug/kg	1.97	0.986	2
Cl3-BZ#28	ND		ug/kg	1.97	0.986	2
Cl4-BZ#44	ND		ug/kg	1.97	0.986	2
Cl4-BZ#49	ND		ug/kg	1.97	0.986	2
Cl4-BZ#52	ND		ug/kg	1.97	0.986	2
Cl4-BZ#66	ND		ug/kg	1.97	0.986	2
Cl5-BZ#87	ND		ug/kg	1.97	0.986	2
Cl5-BZ#101	2.42		ug/kg	1.97	0.986	2
Cl5-BZ#105	ND		ug/kg	1.97	0.986	2
Cl5-BZ#118	ND		ug/kg	1.97	0.986	2
Cl6-BZ#128	ND		ug/kg	1.97	0.986	2
Cl6-BZ#138	ND		ug/kg	1.97	0.986	2
Cl6-BZ#153	ND		ug/kg	1.97	0.986	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-35 D
 Client ID: MN COMPOSITE 4 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.97	0.986	2
Cl7-BZ#180	ND		ug/kg	1.97	0.986	2
Cl7-BZ#183	ND		ug/kg	1.97	0.986	2
Cl7-BZ#184	ND		ug/kg	1.97	0.986	2
Cl7-BZ#187	ND		ug/kg	1.97	0.986	2
Cl8-BZ#195	ND		ug/kg	1.97	0.986	2
Cl9-BZ#206	ND		ug/kg	1.97	0.986	2
Cl10-BZ#209	ND		ug/kg	1.97	0.986	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	70		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	70		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-36 D
 Client ID: MN COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 02:18
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.0	8.52	2
Acenaphthylene	ND		ug/kg	17.0	8.52	2
Acenaphthene	ND		ug/kg	17.0	8.52	2
Fluorene	ND		ug/kg	17.0	8.52	2
Phenanthrene	9.22	J	ug/kg	17.0	8.52	2
Anthracene	ND		ug/kg	17.0	8.52	2
Fluoranthene	37.2		ug/kg	17.0	8.52	2
Pyrene	33.9		ug/kg	17.0	8.52	2
Benz(a)anthracene	21.9		ug/kg	17.0	8.52	2
Chrysene	15.6	J	ug/kg	17.0	8.52	2
Benzo(b)fluoranthene	13.9	J	ug/kg	17.0	8.52	2
Benzo(k)fluoranthene	ND		ug/kg	17.0	8.52	2
Benzo(a)pyrene	ND		ug/kg	17.0	8.52	2
Indeno(1,2,3-cd)Pyrene	18.3		ug/kg	17.0	8.52	2
Dibenz(a,h)anthracene	ND		ug/kg	17.0	8.52	2
Benzo(ghi)perylene	ND		ug/kg	17.0	8.52	2
Cl2-BZ#8	ND		ug/kg	1.70	0.852	2
Cl3-BZ#18	ND		ug/kg	1.70	0.852	2
Cl3-BZ#28	ND		ug/kg	1.70	0.852	2
Cl4-BZ#44	2.41		ug/kg	1.70	0.852	2
Cl4-BZ#49	ND		ug/kg	1.70	0.852	2
Cl4-BZ#52	0.865	J	ug/kg	1.70	0.852	2
Cl4-BZ#66	ND		ug/kg	1.70	0.852	2
Cl5-BZ#87	ND		ug/kg	1.70	0.852	2
Cl5-BZ#101	2.64		ug/kg	1.70	0.852	2
Cl5-BZ#105	ND		ug/kg	1.70	0.852	2
Cl5-BZ#118	ND		ug/kg	1.70	0.852	2
Cl6-BZ#128	ND		ug/kg	1.70	0.852	2
Cl6-BZ#138	0.853	J	ug/kg	1.70	0.852	2
Cl6-BZ#153	ND		ug/kg	1.70	0.852	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-36 D
 Client ID: MN COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.70	0.852	2
CI7-BZ#180	ND		ug/kg	1.70	0.852	2
CI7-BZ#183	ND		ug/kg	1.70	0.852	2
CI7-BZ#184	ND		ug/kg	1.70	0.852	2
CI7-BZ#187	ND		ug/kg	1.70	0.852	2
CI8-BZ#195	ND		ug/kg	1.70	0.852	2
CI9-BZ#206	ND		ug/kg	1.70	0.852	2
CI10-BZ#209	ND		ug/kg	1.70	0.852	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	62		30-150
DBOB	72		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-37 D
 Client ID: MN COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 02:50
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.43	2
Acenaphthylene	ND		ug/kg	16.9	8.43	2
Acenaphthene	ND		ug/kg	16.9	8.43	2
Fluorene	ND		ug/kg	16.9	8.43	2
Phenanthrene	9.83	J	ug/kg	16.9	8.43	2
Anthracene	ND		ug/kg	16.9	8.43	2
Fluoranthene	40.0		ug/kg	16.9	8.43	2
Pyrene	33.9		ug/kg	16.9	8.43	2
Benz(a)anthracene	25.8		ug/kg	16.9	8.43	2
Chrysene	17.3		ug/kg	16.9	8.43	2
Benzo(b)fluoranthene	14.4	J	ug/kg	16.9	8.43	2
Benzo(k)fluoranthene	9.06	J	ug/kg	16.9	8.43	2
Benzo(a)pyrene	ND		ug/kg	16.9	8.43	2
Indeno(1,2,3-cd)Pyrene	18.9		ug/kg	16.9	8.43	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.43	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.43	2
Cl2-BZ#8	ND		ug/kg	1.69	0.843	2
Cl3-BZ#18	ND		ug/kg	1.69	0.843	2
Cl3-BZ#28	ND		ug/kg	1.69	0.843	2
Cl4-BZ#44	3.62		ug/kg	1.69	0.843	2
Cl4-BZ#49	ND		ug/kg	1.69	0.843	2
Cl4-BZ#52	1.24	J	ug/kg	1.69	0.843	2
Cl4-BZ#66	ND		ug/kg	1.69	0.843	2
Cl5-BZ#87	ND		ug/kg	1.69	0.843	2
Cl5-BZ#101	2.56		ug/kg	1.69	0.843	2
Cl5-BZ#105	ND		ug/kg	1.69	0.843	2
Cl5-BZ#118	ND		ug/kg	1.69	0.843	2
Cl6-BZ#128	ND		ug/kg	1.69	0.843	2
Cl6-BZ#138	ND		ug/kg	1.69	0.843	2
Cl6-BZ#153	ND		ug/kg	1.69	0.843	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-37 D
 Client ID: MN COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.69	0.843	2
Cl7-BZ#180	ND		ug/kg	1.69	0.843	2
Cl7-BZ#183	ND		ug/kg	1.69	0.843	2
Cl7-BZ#184	ND		ug/kg	1.69	0.843	2
Cl7-BZ#187	ND		ug/kg	1.69	0.843	2
Cl8-BZ#195	ND		ug/kg	1.69	0.843	2
Cl9-BZ#206	ND		ug/kg	1.69	0.843	2
Cl10-BZ#209	ND		ug/kg	1.69	0.843	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	56		30-150
Pyrene-d10	66		30-150
Benzo(b)fluoranthene-d12	62		30-150
DBOB	67		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-38 D
 Client ID: MN COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 19:00

Analytical Date: 11/04/17 03:22

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.7	8.36	2
Acenaphthylene	ND		ug/kg	16.7	8.36	2
Acenaphthene	ND		ug/kg	16.7	8.36	2
Fluorene	ND		ug/kg	16.7	8.36	2
Phenanthrene	9.12	J	ug/kg	16.7	8.36	2
Anthracene	ND		ug/kg	16.7	8.36	2
Fluoranthene	41.7		ug/kg	16.7	8.36	2
Pyrene	37.5		ug/kg	16.7	8.36	2
Benz(a)anthracene	24.5		ug/kg	16.7	8.36	2
Chrysene	18.1		ug/kg	16.7	8.36	2
Benzo(b)fluoranthene	14.8	J	ug/kg	16.7	8.36	2
Benzo(k)fluoranthene	ND		ug/kg	16.7	8.36	2
Benzo(a)pyrene	8.54	J	ug/kg	16.7	8.36	2
Indeno(1,2,3-cd)Pyrene	18.7		ug/kg	16.7	8.36	2
Dibenz(a,h)anthracene	ND		ug/kg	16.7	8.36	2
Benzo(ghi)perylene	ND		ug/kg	16.7	8.36	2
Cl2-BZ#8	ND		ug/kg	1.67	0.836	2
Cl3-BZ#18	ND		ug/kg	1.67	0.836	2
Cl3-BZ#28	ND		ug/kg	1.67	0.836	2
Cl4-BZ#44	2.32		ug/kg	1.67	0.836	2
Cl4-BZ#49	ND		ug/kg	1.67	0.836	2
Cl4-BZ#52	1.05	J	ug/kg	1.67	0.836	2
Cl4-BZ#66	ND		ug/kg	1.67	0.836	2
Cl5-BZ#87	ND		ug/kg	1.67	0.836	2
Cl5-BZ#101	3.13		ug/kg	1.67	0.836	2
Cl5-BZ#105	ND		ug/kg	1.67	0.836	2
Cl5-BZ#118	ND		ug/kg	1.67	0.836	2
Cl6-BZ#128	ND		ug/kg	1.67	0.836	2
Cl6-BZ#138	0.993	J	ug/kg	1.67	0.836	2
Cl6-BZ#153	1.16	J	ug/kg	1.67	0.836	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-38 D
 Client ID: MN COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.67	0.836	2
CI7-BZ#180	ND		ug/kg	1.67	0.836	2
CI7-BZ#183	ND		ug/kg	1.67	0.836	2
CI7-BZ#184	ND		ug/kg	1.67	0.836	2
CI7-BZ#187	ND		ug/kg	1.67	0.836	2
CI8-BZ#195	ND		ug/kg	1.67	0.836	2
CI9-BZ#206	ND		ug/kg	1.67	0.836	2
CI10-BZ#209	ND		ug/kg	1.67	0.836	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	68		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-39 D
 Client ID: MN COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 03:53
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.7	8.83	2
Acenaphthylene	ND		ug/kg	17.7	8.83	2
Acenaphthene	ND		ug/kg	17.7	8.83	2
Fluorene	ND		ug/kg	17.7	8.83	2
Phenanthrene	14.2	J	ug/kg	17.7	8.83	2
Anthracene	ND		ug/kg	17.7	8.83	2
Fluoranthene	53.6		ug/kg	17.7	8.83	2
Pyrene	50.2		ug/kg	17.7	8.83	2
Benz(a)anthracene	30.0		ug/kg	17.7	8.83	2
Chrysene	23.6		ug/kg	17.7	8.83	2
Benzo(b)fluoranthene	17.8		ug/kg	17.7	8.83	2
Benzo(k)fluoranthene	9.85	J	ug/kg	17.7	8.83	2
Benzo(a)pyrene	10.7	J	ug/kg	17.7	8.83	2
Indeno(1,2,3-cd)Pyrene	20.1		ug/kg	17.7	8.83	2
Dibenz(a,h)anthracene	ND		ug/kg	17.7	8.83	2
Benzo(ghi)perylene	ND		ug/kg	17.7	8.83	2
Cl2-BZ#8	ND		ug/kg	1.77	0.883	2
Cl3-BZ#18	ND		ug/kg	1.77	0.883	2
Cl3-BZ#28	ND		ug/kg	1.77	0.883	2
Cl4-BZ#44	2.66		ug/kg	1.77	0.883	2
Cl4-BZ#49	1.05	J	ug/kg	1.77	0.883	2
Cl4-BZ#52	1.42	J	ug/kg	1.77	0.883	2
Cl4-BZ#66	1.04	J	ug/kg	1.77	0.883	2
Cl5-BZ#87	ND		ug/kg	1.77	0.883	2
Cl5-BZ#101	3.01		ug/kg	1.77	0.883	2
Cl5-BZ#105	ND		ug/kg	1.77	0.883	2
Cl5-BZ#118	ND		ug/kg	1.77	0.883	2
Cl6-BZ#128	ND		ug/kg	1.77	0.883	2
Cl6-BZ#138	1.26	J	ug/kg	1.77	0.883	2
Cl6-BZ#153	1.49	J	ug/kg	1.77	0.883	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-39 D
 Client ID: MN COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.77	0.883	2
Cl7-BZ#180	ND		ug/kg	1.77	0.883	2
Cl7-BZ#183	ND		ug/kg	1.77	0.883	2
Cl7-BZ#184	ND		ug/kg	1.77	0.883	2
Cl7-BZ#187	ND		ug/kg	1.77	0.883	2
Cl8-BZ#195	ND		ug/kg	1.77	0.883	2
Cl9-BZ#206	ND		ug/kg	1.77	0.883	2
Cl10-BZ#209	ND		ug/kg	1.77	0.883	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	64		30-150
DBOB	70		30-150
BZ 198	70		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-40 D
 Client ID: MN COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/04/17 04:25
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.7	8.36	2
Acenaphthylene	ND		ug/kg	16.7	8.36	2
Acenaphthene	ND		ug/kg	16.7	8.36	2
Fluorene	ND		ug/kg	16.7	8.36	2
Phenanthrene	ND		ug/kg	16.7	8.36	2
Anthracene	ND		ug/kg	16.7	8.36	2
Fluoranthene	35.7		ug/kg	16.7	8.36	2
Pyrene	32.0		ug/kg	16.7	8.36	2
Benz(a)anthracene	22.3		ug/kg	16.7	8.36	2
Chrysene	15.4	J	ug/kg	16.7	8.36	2
Benzo(b)fluoranthene	14.1	J	ug/kg	16.7	8.36	2
Benzo(k)fluoranthene	ND		ug/kg	16.7	8.36	2
Benzo(a)pyrene	ND		ug/kg	16.7	8.36	2
Indeno(1,2,3-cd)Pyrene	18.5		ug/kg	16.7	8.36	2
Dibenz(a,h)anthracene	ND		ug/kg	16.7	8.36	2
Benzo(ghi)perylene	ND		ug/kg	16.7	8.36	2
Cl2-BZ#8	ND		ug/kg	1.67	0.836	2
Cl3-BZ#18	ND		ug/kg	1.67	0.836	2
Cl3-BZ#28	ND		ug/kg	1.67	0.836	2
Cl4-BZ#44	2.34		ug/kg	1.67	0.836	2
Cl4-BZ#49	ND		ug/kg	1.67	0.836	2
Cl4-BZ#52	1.56	J	ug/kg	1.67	0.836	2
Cl4-BZ#66	0.970	J	ug/kg	1.67	0.836	2
Cl5-BZ#87	ND		ug/kg	1.67	0.836	2
Cl5-BZ#101	2.43		ug/kg	1.67	0.836	2
Cl5-BZ#105	ND		ug/kg	1.67	0.836	2
Cl5-BZ#118	ND		ug/kg	1.67	0.836	2
Cl6-BZ#128	ND		ug/kg	1.67	0.836	2
Cl6-BZ#138	1.30	J	ug/kg	1.67	0.836	2
Cl6-BZ#153	0.885	J	ug/kg	1.67	0.836	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-40 D
 Client ID: MN COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.67	0.836	2
CI7-BZ#180	ND		ug/kg	1.67	0.836	2
CI7-BZ#183	ND		ug/kg	1.67	0.836	2
CI7-BZ#184	ND		ug/kg	1.67	0.836	2
CI7-BZ#187	ND		ug/kg	1.67	0.836	2
CI8-BZ#195	ND		ug/kg	1.67	0.836	2
CI9-BZ#206	ND		ug/kg	1.67	0.836	2
CI10-BZ#209	ND		ug/kg	1.67	0.836	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	67		30-150
DBOB	71		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-41 D
 Client ID: MN COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 16:38
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.3	9.14	2
Acenaphthylene	ND		ug/kg	18.3	9.14	2
Acenaphthene	11.2	J	ug/kg	18.3	9.14	2
Fluorene	ND		ug/kg	18.3	9.14	2
Phenanthrene	23.1		ug/kg	18.3	9.14	2
Anthracene	ND		ug/kg	18.3	9.14	2
Fluoranthene	82.4		ug/kg	18.3	9.14	2
Pyrene	68.4		ug/kg	18.3	9.14	2
Benz(a)anthracene	41.5		ug/kg	18.3	9.14	2
Chrysene	39.3		ug/kg	18.3	9.14	2
Benzo(b)fluoranthene	27.5		ug/kg	18.3	9.14	2
Benzo(k)fluoranthene	13.1	J	ug/kg	18.3	9.14	2
Benzo(a)pyrene	17.6	J	ug/kg	18.3	9.14	2
Indeno(1,2,3-cd)Pyrene	15.6	J	ug/kg	18.3	9.14	2
Dibenz(a,h)anthracene	ND		ug/kg	18.3	9.14	2
Benzo(ghi)perylene	ND		ug/kg	18.3	9.14	2
Cl2-BZ#8	ND		ug/kg	1.83	0.914	2
Cl3-BZ#18	ND		ug/kg	1.83	0.914	2
Cl3-BZ#28	ND		ug/kg	1.83	0.914	2
Cl4-BZ#44	2.44		ug/kg	1.83	0.914	2
Cl4-BZ#49	1.52	J	ug/kg	1.83	0.914	2
Cl4-BZ#52	3.16		ug/kg	1.83	0.914	2
Cl4-BZ#66	1.59	J	ug/kg	1.83	0.914	2
Cl5-BZ#87	ND		ug/kg	1.83	0.914	2
Cl5-BZ#101	4.20		ug/kg	1.83	0.914	2
Cl5-BZ#105	1.32	J	ug/kg	1.83	0.914	2
Cl5-BZ#118	1.22	J	ug/kg	1.83	0.914	2
Cl6-BZ#128	ND		ug/kg	1.83	0.914	2
Cl6-BZ#138	1.65	J	ug/kg	1.83	0.914	2
Cl6-BZ#153	1.58	J	ug/kg	1.83	0.914	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-41 D
 Client ID: MN COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.83	0.914	2
CI7-BZ#180	ND		ug/kg	1.83	0.914	2
CI7-BZ#183	ND		ug/kg	1.83	0.914	2
CI7-BZ#184	ND		ug/kg	1.83	0.914	2
CI7-BZ#187	ND		ug/kg	1.83	0.914	2
CI8-BZ#195	ND		ug/kg	1.83	0.914	2
CI9-BZ#206	ND		ug/kg	1.83	0.914	2
CI10-BZ#209	ND		ug/kg	1.83	0.914	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	47		30-150
Pyrene-d10	56		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	57		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-42 D
 Client ID: MN COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 18:47
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.1	9.06	2
Acenaphthylene	ND		ug/kg	18.1	9.06	2
Acenaphthene	ND		ug/kg	18.1	9.06	2
Fluorene	ND		ug/kg	18.1	9.06	2
Phenanthrene	16.4	J	ug/kg	18.1	9.06	2
Anthracene	ND		ug/kg	18.1	9.06	2
Fluoranthene	66.2		ug/kg	18.1	9.06	2
Pyrene	56.0		ug/kg	18.1	9.06	2
Benz(a)anthracene	34.9		ug/kg	18.1	9.06	2
Chrysene	31.8		ug/kg	18.1	9.06	2
Benzo(b)fluoranthene	22.5		ug/kg	18.1	9.06	2
Benzo(k)fluoranthene	11.5	J	ug/kg	18.1	9.06	2
Benzo(a)pyrene	12.7	J	ug/kg	18.1	9.06	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.1	9.06	2
Dibenz(a,h)anthracene	ND		ug/kg	18.1	9.06	2
Benzo(ghi)perylene	ND		ug/kg	18.1	9.06	2
Cl2-BZ#8	ND		ug/kg	1.81	0.906	2
Cl3-BZ#18	ND		ug/kg	1.81	0.906	2
Cl3-BZ#28	ND		ug/kg	1.81	0.906	2
Cl4-BZ#44	2.39		ug/kg	1.81	0.906	2
Cl4-BZ#49	1.32	J	ug/kg	1.81	0.906	2
Cl4-BZ#52	2.79		ug/kg	1.81	0.906	2
Cl4-BZ#66	1.43	J	ug/kg	1.81	0.906	2
Cl5-BZ#87	ND		ug/kg	1.81	0.906	2
Cl5-BZ#101	2.83		ug/kg	1.81	0.906	2
Cl5-BZ#105	ND		ug/kg	1.81	0.906	2
Cl5-BZ#118	1.28	J	ug/kg	1.81	0.906	2
Cl6-BZ#128	ND		ug/kg	1.81	0.906	2
Cl6-BZ#138	1.66	J	ug/kg	1.81	0.906	2
Cl6-BZ#153	1.30	J	ug/kg	1.81	0.906	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-42 D
 Client ID: MN COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.81	0.906	2
Cl7-BZ#180	ND		ug/kg	1.81	0.906	2
Cl7-BZ#183	ND		ug/kg	1.81	0.906	2
Cl7-BZ#184	ND		ug/kg	1.81	0.906	2
Cl7-BZ#187	ND		ug/kg	1.81	0.906	2
Cl8-BZ#195	ND		ug/kg	1.81	0.906	2
Cl9-BZ#206	ND		ug/kg	1.81	0.906	2
Cl10-BZ#209	ND		ug/kg	1.81	0.906	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	42		30-150
Pyrene-d10	50		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	51		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-43 D
 Client ID: MN COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Extraction Date: 10/23/17 21:30

Cleanup Method: EPA 3630

Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 19:19
 Analyst: GP

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.4	8.68	2
Acenaphthylene	ND		ug/kg	17.4	8.68	2
Acenaphthene	ND		ug/kg	17.4	8.68	2
Fluorene	ND		ug/kg	17.4	8.68	2
Phenanthrene	21.4		ug/kg	17.4	8.68	2
Anthracene	ND		ug/kg	17.4	8.68	2
Fluoranthene	78.8		ug/kg	17.4	8.68	2
Pyrene	67.3		ug/kg	17.4	8.68	2
Benz(a)anthracene	42.6		ug/kg	17.4	8.68	2
Chrysene	34.9		ug/kg	17.4	8.68	2
Benzo(b)fluoranthene	26.9		ug/kg	17.4	8.68	2
Benzo(k)fluoranthene	11.3	J	ug/kg	17.4	8.68	2
Benzo(a)pyrene	16.5	J	ug/kg	17.4	8.68	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.4	8.68	2
Dibenz(a,h)anthracene	ND		ug/kg	17.4	8.68	2
Benzo(ghi)perylene	9.38	J	ug/kg	17.4	8.68	2
Cl2-BZ#8	ND		ug/kg	1.74	0.868	2
Cl3-BZ#18	ND		ug/kg	1.74	0.868	2
Cl3-BZ#28	ND		ug/kg	1.74	0.868	2
Cl4-BZ#44	2.57		ug/kg	1.74	0.868	2
Cl4-BZ#49	1.32	J	ug/kg	1.74	0.868	2
Cl4-BZ#52	2.80		ug/kg	1.74	0.868	2
Cl4-BZ#66	1.56	J	ug/kg	1.74	0.868	2
Cl5-BZ#87	1.09	J	ug/kg	1.74	0.868	2
Cl5-BZ#101	3.23		ug/kg	1.74	0.868	2
Cl5-BZ#105	1.63	J	ug/kg	1.74	0.868	2
Cl5-BZ#118	1.48	J	ug/kg	1.74	0.868	2
Cl6-BZ#128	ND		ug/kg	1.74	0.868	2
Cl6-BZ#138	2.14		ug/kg	1.74	0.868	2
Cl6-BZ#153	1.34	J	ug/kg	1.74	0.868	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-43 D
 Client ID: MN COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.74	0.868	2
CI7-BZ#180	ND		ug/kg	1.74	0.868	2
CI7-BZ#183	ND		ug/kg	1.74	0.868	2
CI7-BZ#184	ND		ug/kg	1.74	0.868	2
CI7-BZ#187	ND		ug/kg	1.74	0.868	2
CI8-BZ#195	ND		ug/kg	1.74	0.868	2
CI9-BZ#206	ND		ug/kg	1.74	0.868	2
CI10-BZ#209	ND		ug/kg	1.74	0.868	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	38		30-150
Pyrene-d10	44		30-150
Benzo(b)fluoranthene-d12	41		30-150
DBOB	46		30-150
BZ 198	46		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-44 D
 Client ID: MN COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 19:52
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.36	2
Acenaphthylene	ND		ug/kg	18.7	9.36	2
Acenaphthene	ND		ug/kg	18.7	9.36	2
Fluorene	ND		ug/kg	18.7	9.36	2
Phenanthrene	23.8		ug/kg	18.7	9.36	2
Anthracene	ND		ug/kg	18.7	9.36	2
Fluoranthene	92.6		ug/kg	18.7	9.36	2
Pyrene	80.5		ug/kg	18.7	9.36	2
Benz(a)anthracene	47.0		ug/kg	18.7	9.36	2
Chrysene	39.4		ug/kg	18.7	9.36	2
Benzo(b)fluoranthene	29.3		ug/kg	18.7	9.36	2
Benzo(k)fluoranthene	14.9	J	ug/kg	18.7	9.36	2
Benzo(a)pyrene	16.3	J	ug/kg	18.7	9.36	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.36	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.36	2
Benzo(ghi)perylene	10.9	J	ug/kg	18.7	9.36	2
Cl2-BZ#8	ND		ug/kg	1.87	0.936	2
Cl3-BZ#18	ND		ug/kg	1.87	0.936	2
Cl3-BZ#28	ND		ug/kg	1.87	0.936	2
Cl4-BZ#44	2.68		ug/kg	1.87	0.936	2
Cl4-BZ#49	1.31	J	ug/kg	1.87	0.936	2
Cl4-BZ#52	2.41		ug/kg	1.87	0.936	2
Cl4-BZ#66	1.42	J	ug/kg	1.87	0.936	2
Cl5-BZ#87	0.983	J	ug/kg	1.87	0.936	2
Cl5-BZ#101	3.08		ug/kg	1.87	0.936	2
Cl5-BZ#105	1.30	J	ug/kg	1.87	0.936	2
Cl5-BZ#118	1.28	J	ug/kg	1.87	0.936	2
Cl6-BZ#128	ND		ug/kg	1.87	0.936	2
Cl6-BZ#138	1.65	J	ug/kg	1.87	0.936	2
Cl6-BZ#153	1.49	J	ug/kg	1.87	0.936	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-44 D
 Client ID: MN COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.87	0.936	2
Cl7-BZ#180	ND		ug/kg	1.87	0.936	2
Cl7-BZ#183	ND		ug/kg	1.87	0.936	2
Cl7-BZ#184	ND		ug/kg	1.87	0.936	2
Cl7-BZ#187	ND		ug/kg	1.87	0.936	2
Cl8-BZ#195	ND		ug/kg	1.87	0.936	2
Cl9-BZ#206	ND		ug/kg	1.87	0.936	2
Cl10-BZ#209	ND		ug/kg	1.87	0.936	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	48		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	54		30-150
DBOB	56		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-45 D
 Client ID: MN COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 20:24
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.4	9.21	2
Acenaphthylene	ND		ug/kg	18.4	9.21	2
Acenaphthene	ND		ug/kg	18.4	9.21	2
Fluorene	ND		ug/kg	18.4	9.21	2
Phenanthrene	15.6	J	ug/kg	18.4	9.21	2
Anthracene	ND		ug/kg	18.4	9.21	2
Fluoranthene	62.3		ug/kg	18.4	9.21	2
Pyrene	52.8		ug/kg	18.4	9.21	2
Benz(a)anthracene	33.0		ug/kg	18.4	9.21	2
Chrysene	25.8		ug/kg	18.4	9.21	2
Benzo(b)fluoranthene	22.1		ug/kg	18.4	9.21	2
Benzo(k)fluoranthene	9.34	J	ug/kg	18.4	9.21	2
Benzo(a)pyrene	11.6	J	ug/kg	18.4	9.21	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.4	9.21	2
Dibenz(a,h)anthracene	ND		ug/kg	18.4	9.21	2
Benzo(ghi)perylene	ND		ug/kg	18.4	9.21	2
Cl2-BZ#8	ND		ug/kg	1.84	0.921	2
Cl3-BZ#18	ND		ug/kg	1.84	0.921	2
Cl3-BZ#28	ND		ug/kg	1.84	0.921	2
Cl4-BZ#44	1.85		ug/kg	1.84	0.921	2
Cl4-BZ#49	1.23	J	ug/kg	1.84	0.921	2
Cl4-BZ#52	2.27		ug/kg	1.84	0.921	2
Cl4-BZ#66	1.18	J	ug/kg	1.84	0.921	2
Cl5-BZ#87	ND		ug/kg	1.84	0.921	2
Cl5-BZ#101	2.74		ug/kg	1.84	0.921	2
Cl5-BZ#105	ND		ug/kg	1.84	0.921	2
Cl5-BZ#118	1.03	J	ug/kg	1.84	0.921	2
Cl6-BZ#128	ND		ug/kg	1.84	0.921	2
Cl6-BZ#138	1.70	J	ug/kg	1.84	0.921	2
Cl6-BZ#153	1.41	J	ug/kg	1.84	0.921	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-45 D
 Client ID: MN COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.84	0.921	2
CI7-BZ#180	ND		ug/kg	1.84	0.921	2
CI7-BZ#183	ND		ug/kg	1.84	0.921	2
CI7-BZ#184	ND		ug/kg	1.84	0.921	2
CI7-BZ#187	ND		ug/kg	1.84	0.921	2
CI8-BZ#195	ND		ug/kg	1.84	0.921	2
CI9-BZ#206	ND		ug/kg	1.84	0.921	2
CI10-BZ#209	ND		ug/kg	1.84	0.921	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	39		30-150
Pyrene-d10	45		30-150
Benzo(b)fluoranthene-d12	42		30-150
DBOB	48		30-150
BZ 198	49		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-46 D
 Client ID: MN COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 20:56
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.8	8.40	2
Acenaphthylene	ND		ug/kg	16.8	8.40	2
Acenaphthene	11.6	J	ug/kg	16.8	8.40	2
Fluorene	ND		ug/kg	16.8	8.40	2
Phenanthrene	18.7		ug/kg	16.8	8.40	2
Anthracene	ND		ug/kg	16.8	8.40	2
Fluoranthene	89.2		ug/kg	16.8	8.40	2
Pyrene	74.4		ug/kg	16.8	8.40	2
Benz(a)anthracene	46.7		ug/kg	16.8	8.40	2
Chrysene	36.2		ug/kg	16.8	8.40	2
Benzo(b)fluoranthene	30.1		ug/kg	16.8	8.40	2
Benzo(k)fluoranthene	11.8	J	ug/kg	16.8	8.40	2
Benzo(a)pyrene	15.5	J	ug/kg	16.8	8.40	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	16.8	8.40	2
Dibenz(a,h)anthracene	ND		ug/kg	16.8	8.40	2
Benzo(ghi)perylene	8.75	J	ug/kg	16.8	8.40	2
Cl2-BZ#8	2.66		ug/kg	1.68	0.840	2
Cl3-BZ#18	ND		ug/kg	1.68	0.840	2
Cl3-BZ#28	ND		ug/kg	1.68	0.840	2
Cl4-BZ#44	2.24		ug/kg	1.68	0.840	2
Cl4-BZ#49	1.99		ug/kg	1.68	0.840	2
Cl4-BZ#52	2.87		ug/kg	1.68	0.840	2
Cl4-BZ#66	1.46	J	ug/kg	1.68	0.840	2
Cl5-BZ#87	ND		ug/kg	1.68	0.840	2
Cl5-BZ#101	2.54		ug/kg	1.68	0.840	2
Cl5-BZ#105	ND		ug/kg	1.68	0.840	2
Cl5-BZ#118	1.17	J	ug/kg	1.68	0.840	2
Cl6-BZ#128	ND		ug/kg	1.68	0.840	2
Cl6-BZ#138	1.38	J	ug/kg	1.68	0.840	2
Cl6-BZ#153	1.32	J	ug/kg	1.68	0.840	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-46 D
 Client ID: MN COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.68	0.840	2
Cl7-BZ#180	ND		ug/kg	1.68	0.840	2
Cl7-BZ#183	ND		ug/kg	1.68	0.840	2
Cl7-BZ#184	ND		ug/kg	1.68	0.840	2
Cl7-BZ#187	ND		ug/kg	1.68	0.840	2
Cl8-BZ#195	ND		ug/kg	1.68	0.840	2
Cl9-BZ#206	ND		ug/kg	1.68	0.840	2
Cl10-BZ#209	ND		ug/kg	1.68	0.840	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	43		30-150
Pyrene-d10	53		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	52		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-47 D
 Client ID: MN COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 21:28
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.3	8.64	2
Acenaphthylene	ND		ug/kg	17.3	8.64	2
Acenaphthene	ND		ug/kg	17.3	8.64	2
Fluorene	ND		ug/kg	17.3	8.64	2
Phenanthrene	16.9	J	ug/kg	17.3	8.64	2
Anthracene	ND		ug/kg	17.3	8.64	2
Fluoranthene	71.1		ug/kg	17.3	8.64	2
Pyrene	60.1		ug/kg	17.3	8.64	2
Benz(a)anthracene	36.8		ug/kg	17.3	8.64	2
Chrysene	29.6		ug/kg	17.3	8.64	2
Benzo(b)fluoranthene	25.6		ug/kg	17.3	8.64	2
Benzo(k)fluoranthene	10.6	J	ug/kg	17.3	8.64	2
Benzo(a)pyrene	13.0	J	ug/kg	17.3	8.64	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.3	8.64	2
Dibenz(a,h)anthracene	ND		ug/kg	17.3	8.64	2
Benzo(ghi)perylene	ND		ug/kg	17.3	8.64	2
Cl2-BZ#8	ND		ug/kg	1.73	0.864	2
Cl3-BZ#18	ND		ug/kg	1.73	0.864	2
Cl3-BZ#28	ND		ug/kg	1.73	0.864	2
Cl4-BZ#44	2.93		ug/kg	1.73	0.864	2
Cl4-BZ#49	1.50	J	ug/kg	1.73	0.864	2
Cl4-BZ#52	3.14		ug/kg	1.73	0.864	2
Cl4-BZ#66	1.17	J	ug/kg	1.73	0.864	2
Cl5-BZ#87	ND		ug/kg	1.73	0.864	2
Cl5-BZ#101	2.47		ug/kg	1.73	0.864	2
Cl5-BZ#105	ND		ug/kg	1.73	0.864	2
Cl5-BZ#118	ND		ug/kg	1.73	0.864	2
Cl6-BZ#128	ND		ug/kg	1.73	0.864	2
Cl6-BZ#138	1.29	J	ug/kg	1.73	0.864	2
Cl6-BZ#153	1.60	J	ug/kg	1.73	0.864	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-47 D
 Client ID: MN COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.73	0.864	2
CI7-BZ#180	ND		ug/kg	1.73	0.864	2
CI7-BZ#183	ND		ug/kg	1.73	0.864	2
CI7-BZ#184	ND		ug/kg	1.73	0.864	2
CI7-BZ#187	ND		ug/kg	1.73	0.864	2
CI8-BZ#195	ND		ug/kg	1.73	0.864	2
CI9-BZ#206	ND		ug/kg	1.73	0.864	2
CI10-BZ#209	ND		ug/kg	1.73	0.864	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	41		30-150
Pyrene-d10	49		30-150
Benzo(b)fluoranthene-d12	46		30-150
DBOB	49		30-150
BZ 198	51		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-48 D
 Client ID: MN COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 22:01
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.5	8.77	2
Acenaphthylene	ND		ug/kg	17.5	8.77	2
Acenaphthene	ND		ug/kg	17.5	8.77	2
Fluorene	ND		ug/kg	17.5	8.77	2
Phenanthrene	17.1	J	ug/kg	17.5	8.77	2
Anthracene	ND		ug/kg	17.5	8.77	2
Fluoranthene	68.8		ug/kg	17.5	8.77	2
Pyrene	58.6		ug/kg	17.5	8.77	2
Benz(a)anthracene	33.7		ug/kg	17.5	8.77	2
Chrysene	29.2		ug/kg	17.5	8.77	2
Benzo(b)fluoranthene	23.8		ug/kg	17.5	8.77	2
Benzo(k)fluoranthene	10.2	J	ug/kg	17.5	8.77	2
Benzo(a)pyrene	12.5	J	ug/kg	17.5	8.77	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.5	8.77	2
Dibenz(a,h)anthracene	ND		ug/kg	17.5	8.77	2
Benzo(ghi)perylene	ND		ug/kg	17.5	8.77	2
Cl2-BZ#8	ND		ug/kg	1.75	0.877	2
Cl3-BZ#18	ND		ug/kg	1.75	0.877	2
Cl3-BZ#28	ND		ug/kg	1.75	0.877	2
Cl4-BZ#44	2.76		ug/kg	1.75	0.877	2
Cl4-BZ#49	1.74	J	ug/kg	1.75	0.877	2
Cl4-BZ#52	3.45		ug/kg	1.75	0.877	2
Cl4-BZ#66	1.37	J	ug/kg	1.75	0.877	2
Cl5-BZ#87	ND		ug/kg	1.75	0.877	2
Cl5-BZ#101	2.52		ug/kg	1.75	0.877	2
Cl5-BZ#105	ND		ug/kg	1.75	0.877	2
Cl5-BZ#118	0.951	J	ug/kg	1.75	0.877	2
Cl6-BZ#128	ND		ug/kg	1.75	0.877	2
Cl6-BZ#138	1.27	J	ug/kg	1.75	0.877	2
Cl6-BZ#153	1.10	J	ug/kg	1.75	0.877	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-48 D
 Client ID: MN COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.75	0.877	2
Cl7-BZ#180	ND		ug/kg	1.75	0.877	2
Cl7-BZ#183	ND		ug/kg	1.75	0.877	2
Cl7-BZ#184	ND		ug/kg	1.75	0.877	2
Cl7-BZ#187	ND		ug/kg	1.75	0.877	2
Cl8-BZ#195	ND		ug/kg	1.75	0.877	2
Cl9-BZ#206	ND		ug/kg	1.75	0.877	2
Cl10-BZ#209	ND		ug/kg	1.75	0.877	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	45		30-150
Pyrene-d10	50		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	54		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-49 D
 Client ID: MN COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 22:33
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.9	9.47	2
Acenaphthylene	ND		ug/kg	18.9	9.47	2
Acenaphthene	ND		ug/kg	18.9	9.47	2
Fluorene	ND		ug/kg	18.9	9.47	2
Phenanthrene	14.4	J	ug/kg	18.9	9.47	2
Anthracene	ND		ug/kg	18.9	9.47	2
Fluoranthene	60.8		ug/kg	18.9	9.47	2
Pyrene	50.0		ug/kg	18.9	9.47	2
Benz(a)anthracene	34.3		ug/kg	18.9	9.47	2
Chrysene	25.5		ug/kg	18.9	9.47	2
Benzo(b)fluoranthene	21.6		ug/kg	18.9	9.47	2
Benzo(k)fluoranthene	9.77	J	ug/kg	18.9	9.47	2
Benzo(a)pyrene	10.0	J	ug/kg	18.9	9.47	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.9	9.47	2
Dibenz(a,h)anthracene	ND		ug/kg	18.9	9.47	2
Benzo(ghi)perylene	ND		ug/kg	18.9	9.47	2
Cl2-BZ#8	ND		ug/kg	1.89	0.947	2
Cl3-BZ#18	ND		ug/kg	1.89	0.947	2
Cl3-BZ#28	ND		ug/kg	1.89	0.947	2
Cl4-BZ#44	2.05		ug/kg	1.89	0.947	2
Cl4-BZ#49	1.49	J	ug/kg	1.89	0.947	2
Cl4-BZ#52	2.97		ug/kg	1.89	0.947	2
Cl4-BZ#66	1.25	J	ug/kg	1.89	0.947	2
Cl5-BZ#87	ND		ug/kg	1.89	0.947	2
Cl5-BZ#101	1.87	J	ug/kg	1.89	0.947	2
Cl5-BZ#105	ND		ug/kg	1.89	0.947	2
Cl5-BZ#118	ND		ug/kg	1.89	0.947	2
Cl6-BZ#128	ND		ug/kg	1.89	0.947	2
Cl6-BZ#138	1.21	J	ug/kg	1.89	0.947	2
Cl6-BZ#153	1.10	J	ug/kg	1.89	0.947	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-49 D
 Client ID: MN COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.89	0.947	2
CI7-BZ#180	ND		ug/kg	1.89	0.947	2
CI7-BZ#183	ND		ug/kg	1.89	0.947	2
CI7-BZ#184	ND		ug/kg	1.89	0.947	2
CI7-BZ#187	ND		ug/kg	1.89	0.947	2
CI8-BZ#195	ND		ug/kg	1.89	0.947	2
CI9-BZ#206	ND		ug/kg	1.89	0.947	2
CI10-BZ#209	ND		ug/kg	1.89	0.947	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	40		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	51		30-150
BZ 198	54		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-50 D
 Client ID: MN COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 23:05
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.34	2
Acenaphthylene	ND		ug/kg	18.7	9.34	2
Acenaphthene	ND		ug/kg	18.7	9.34	2
Fluorene	ND		ug/kg	18.7	9.34	2
Phenanthrene	14.5	J	ug/kg	18.7	9.34	2
Anthracene	ND		ug/kg	18.7	9.34	2
Fluoranthene	56.9		ug/kg	18.7	9.34	2
Pyrene	46.6		ug/kg	18.7	9.34	2
Benz(a)anthracene	30.0		ug/kg	18.7	9.34	2
Chrysene	22.7		ug/kg	18.7	9.34	2
Benzo(b)fluoranthene	15.8	J	ug/kg	18.7	9.34	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.34	2
Indeno(1,2,3-cd)Pyrene	19.2		ug/kg	18.7	9.34	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.34	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.34	2
Cl2-BZ#8	ND		ug/kg	1.87	0.934	2
Cl3-BZ#18	ND		ug/kg	1.87	0.934	2
Cl3-BZ#28	ND		ug/kg	1.87	0.934	2
Cl4-BZ#44	0.970	J	ug/kg	1.87	0.934	2
Cl4-BZ#49	1.23	J	ug/kg	1.87	0.934	2
Cl4-BZ#52	2.30		ug/kg	1.87	0.934	2
Cl4-BZ#66	1.12	J	ug/kg	1.87	0.934	2
Cl5-BZ#87	ND		ug/kg	1.87	0.934	2
Cl5-BZ#101	2.10		ug/kg	1.87	0.934	2
Cl5-BZ#105	ND		ug/kg	1.87	0.934	2
Cl5-BZ#118	ND		ug/kg	1.87	0.934	2
Cl6-BZ#128	ND		ug/kg	1.87	0.934	2
Cl6-BZ#138	1.07	J	ug/kg	1.87	0.934	2
Cl6-BZ#153	ND		ug/kg	1.87	0.934	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-50 D
 Client ID: MN COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.87	0.934	2
Cl7-BZ#180	ND		ug/kg	1.87	0.934	2
Cl7-BZ#183	ND		ug/kg	1.87	0.934	2
Cl7-BZ#184	ND		ug/kg	1.87	0.934	2
Cl7-BZ#187	ND		ug/kg	1.87	0.934	2
Cl8-BZ#195	ND		ug/kg	1.87	0.934	2
Cl9-BZ#206	ND		ug/kg	1.87	0.934	2
Cl10-BZ#209	ND		ug/kg	1.87	0.934	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	41		30-150
Pyrene-d10	47		30-150
Benzo(b)fluoranthene-d12	43		30-150
DBOB	52		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-51 D
 Client ID: MN COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/02/17 23:37
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.8	8.88	2
Acenaphthylene	ND		ug/kg	17.8	8.88	2
Acenaphthene	ND		ug/kg	17.8	8.88	2
Fluorene	ND		ug/kg	17.8	8.88	2
Phenanthrene	20.8		ug/kg	17.8	8.88	2
Anthracene	ND		ug/kg	17.8	8.88	2
Fluoranthene	87.3		ug/kg	17.8	8.88	2
Pyrene	72.5		ug/kg	17.8	8.88	2
Benz(a)anthracene	37.6		ug/kg	17.8	8.88	2
Chrysene	26.8		ug/kg	17.8	8.88	2
Benzo(b)fluoranthene	21.9		ug/kg	17.8	8.88	2
Benzo(k)fluoranthene	11.1	J	ug/kg	17.8	8.88	2
Benzo(a)pyrene	10.9	J	ug/kg	17.8	8.88	2
Indeno(1,2,3-cd)Pyrene	19.7		ug/kg	17.8	8.88	2
Dibenz(a,h)anthracene	ND		ug/kg	17.8	8.88	2
Benzo(ghi)perylene	ND		ug/kg	17.8	8.88	2
Cl2-BZ#8	ND		ug/kg	1.78	0.888	2
Cl3-BZ#18	ND		ug/kg	1.78	0.888	2
Cl3-BZ#28	ND		ug/kg	1.78	0.888	2
Cl4-BZ#44	2.04		ug/kg	1.78	0.888	2
Cl4-BZ#49	1.06	J	ug/kg	1.78	0.888	2
Cl4-BZ#52	2.10		ug/kg	1.78	0.888	2
Cl4-BZ#66	0.940	J	ug/kg	1.78	0.888	2
Cl5-BZ#87	ND		ug/kg	1.78	0.888	2
Cl5-BZ#101	2.14		ug/kg	1.78	0.888	2
Cl5-BZ#105	ND		ug/kg	1.78	0.888	2
Cl5-BZ#118	ND		ug/kg	1.78	0.888	2
Cl6-BZ#128	ND		ug/kg	1.78	0.888	2
Cl6-BZ#138	1.50	J	ug/kg	1.78	0.888	2
Cl6-BZ#153	ND		ug/kg	1.78	0.888	2

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-51 D
 Client ID: MN COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.78	0.888	2
Cl7-BZ#180	ND		ug/kg	1.78	0.888	2
Cl7-BZ#183	ND		ug/kg	1.78	0.888	2
Cl7-BZ#184	ND		ug/kg	1.78	0.888	2
Cl7-BZ#187	ND		ug/kg	1.78	0.888	2
Cl8-BZ#195	ND		ug/kg	1.78	0.888	2
Cl9-BZ#206	ND		ug/kg	1.78	0.888	2
Cl10-BZ#209	ND		ug/kg	1.78	0.888	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	43		30-150
Pyrene-d10	49		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	53		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-52 D
 Client ID: MN COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 00:10
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.0	9.01	2
Acenaphthylene	ND		ug/kg	18.0	9.01	2
Acenaphthene	ND		ug/kg	18.0	9.01	2
Fluorene	ND		ug/kg	18.0	9.01	2
Phenanthrene	23.8		ug/kg	18.0	9.01	2
Anthracene	ND		ug/kg	18.0	9.01	2
Fluoranthene	99.7		ug/kg	18.0	9.01	2
Pyrene	79.3		ug/kg	18.0	9.01	2
Benz(a)anthracene	45.7		ug/kg	18.0	9.01	2
Chrysene	32.5		ug/kg	18.0	9.01	2
Benzo(b)fluoranthene	26.2		ug/kg	18.0	9.01	2
Benzo(k)fluoranthene	12.3	J	ug/kg	18.0	9.01	2
Benzo(a)pyrene	12.9	J	ug/kg	18.0	9.01	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.0	9.01	2
Dibenz(a,h)anthracene	ND		ug/kg	18.0	9.01	2
Benzo(ghi)perylene	ND		ug/kg	18.0	9.01	2
Cl2-BZ#8	ND		ug/kg	1.80	0.901	2
Cl3-BZ#18	ND		ug/kg	1.80	0.901	2
Cl3-BZ#28	ND		ug/kg	1.80	0.901	2
Cl4-BZ#44	3.16		ug/kg	1.80	0.901	2
Cl4-BZ#49	1.79	J	ug/kg	1.80	0.901	2
Cl4-BZ#52	3.31		ug/kg	1.80	0.901	2
Cl4-BZ#66	ND		ug/kg	1.80	0.901	2
Cl5-BZ#87	ND		ug/kg	1.80	0.901	2
Cl5-BZ#101	2.39		ug/kg	1.80	0.901	2
Cl5-BZ#105	ND		ug/kg	1.80	0.901	2
Cl5-BZ#118	ND		ug/kg	1.80	0.901	2
Cl6-BZ#128	ND		ug/kg	1.80	0.901	2
Cl6-BZ#138	1.50	J	ug/kg	1.80	0.901	2
Cl6-BZ#153	1.38	J	ug/kg	1.80	0.901	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-52 D
 Client ID: MN COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.80	0.901	2
Cl7-BZ#180	ND		ug/kg	1.80	0.901	2
Cl7-BZ#183	ND		ug/kg	1.80	0.901	2
Cl7-BZ#184	ND		ug/kg	1.80	0.901	2
Cl7-BZ#187	ND		ug/kg	1.80	0.901	2
Cl8-BZ#195	ND		ug/kg	1.80	0.901	2
Cl9-BZ#206	ND		ug/kg	1.80	0.901	2
Cl10-BZ#209	ND		ug/kg	1.80	0.901	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	45		30-150
Pyrene-d10	52		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	55		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-53 D
 Client ID: MN COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 00:42
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.8	9.38	2
Acenaphthylene	ND		ug/kg	18.8	9.38	2
Acenaphthene	ND		ug/kg	18.8	9.38	2
Fluorene	ND		ug/kg	18.8	9.38	2
Phenanthrene	19.9		ug/kg	18.8	9.38	2
Anthracene	ND		ug/kg	18.8	9.38	2
Fluoranthene	94.2		ug/kg	18.8	9.38	2
Pyrene	74.6		ug/kg	18.8	9.38	2
Benz(a)anthracene	36.4		ug/kg	18.8	9.38	2
Chrysene	29.8		ug/kg	18.8	9.38	2
Benzo(b)fluoranthene	18.5	J	ug/kg	18.8	9.38	2
Benzo(k)fluoranthene	12.4	J	ug/kg	18.8	9.38	2
Benzo(a)pyrene	10.7	J	ug/kg	18.8	9.38	2
Indeno(1,2,3-cd)Pyrene	19.9		ug/kg	18.8	9.38	2
Dibenz(a,h)anthracene	ND		ug/kg	18.8	9.38	2
Benzo(ghi)perylene	ND		ug/kg	18.8	9.38	2
Cl2-BZ#8	ND		ug/kg	1.88	0.938	2
Cl3-BZ#18	ND		ug/kg	1.88	0.938	2
Cl3-BZ#28	ND		ug/kg	1.88	0.938	2
Cl4-BZ#44	0.976	J	ug/kg	1.88	0.938	2
Cl4-BZ#49	1.34	J	ug/kg	1.88	0.938	2
Cl4-BZ#52	2.08		ug/kg	1.88	0.938	2
Cl4-BZ#66	1.11	J	ug/kg	1.88	0.938	2
Cl5-BZ#87	ND		ug/kg	1.88	0.938	2
Cl5-BZ#101	ND		ug/kg	1.88	0.938	2
Cl5-BZ#105	ND		ug/kg	1.88	0.938	2
Cl5-BZ#118	ND		ug/kg	1.88	0.938	2
Cl6-BZ#128	ND		ug/kg	1.88	0.938	2
Cl6-BZ#138	ND		ug/kg	1.88	0.938	2
Cl6-BZ#153	1.24	J	ug/kg	1.88	0.938	2



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-53 D
 Client ID: MN COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.88	0.938	2
Cl7-BZ#180	ND		ug/kg	1.88	0.938	2
Cl7-BZ#183	ND		ug/kg	1.88	0.938	2
Cl7-BZ#184	ND		ug/kg	1.88	0.938	2
Cl7-BZ#187	ND		ug/kg	1.88	0.938	2
Cl8-BZ#195	ND		ug/kg	1.88	0.938	2
Cl9-BZ#206	ND		ug/kg	1.88	0.938	2
Cl10-BZ#209	ND		ug/kg	1.88	0.938	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	44		30-150
Pyrene-d10	50		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	55		30-150
BZ 198	51		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-54 D
 Client ID: MN COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/03/17 01:14
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.9	8.43	2
Acenaphthylene	ND		ug/kg	16.9	8.43	2
Acenaphthene	ND		ug/kg	16.9	8.43	2
Fluorene	ND		ug/kg	16.9	8.43	2
Phenanthrene	20.6		ug/kg	16.9	8.43	2
Anthracene	ND		ug/kg	16.9	8.43	2
Fluoranthene	83.1		ug/kg	16.9	8.43	2
Pyrene	65.8		ug/kg	16.9	8.43	2
Benz(a)anthracene	32.6		ug/kg	16.9	8.43	2
Chrysene	27.0		ug/kg	16.9	8.43	2
Benzo(b)fluoranthene	18.3		ug/kg	16.9	8.43	2
Benzo(k)fluoranthene	9.01	J	ug/kg	16.9	8.43	2
Benzo(a)pyrene	10.6	J	ug/kg	16.9	8.43	2
Indeno(1,2,3-cd)Pyrene	18.4		ug/kg	16.9	8.43	2
Dibenz(a,h)anthracene	ND		ug/kg	16.9	8.43	2
Benzo(ghi)perylene	ND		ug/kg	16.9	8.43	2
Cl2-BZ#8	ND		ug/kg	1.69	0.843	2
Cl3-BZ#18	ND		ug/kg	1.69	0.843	2
Cl3-BZ#28	ND		ug/kg	1.69	0.843	2
Cl4-BZ#44	ND		ug/kg	1.69	0.843	2
Cl4-BZ#49	1.43	J	ug/kg	1.69	0.843	2
Cl4-BZ#52	2.66		ug/kg	1.69	0.843	2
Cl4-BZ#66	ND		ug/kg	1.69	0.843	2
Cl5-BZ#87	ND		ug/kg	1.69	0.843	2
Cl5-BZ#101	1.95		ug/kg	1.69	0.843	2
Cl5-BZ#105	ND		ug/kg	1.69	0.843	2
Cl5-BZ#118	ND		ug/kg	1.69	0.843	2
Cl6-BZ#128	ND		ug/kg	1.69	0.843	2
Cl6-BZ#138	ND		ug/kg	1.69	0.843	2
Cl6-BZ#153	ND		ug/kg	1.69	0.843	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-54 D
 Client ID: MN COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.69	0.843	2
CI7-BZ#180	ND		ug/kg	1.69	0.843	2
CI7-BZ#183	ND		ug/kg	1.69	0.843	2
CI7-BZ#184	ND		ug/kg	1.69	0.843	2
CI7-BZ#187	ND		ug/kg	1.69	0.843	2
CI8-BZ#195	ND		ug/kg	1.69	0.843	2
CI9-BZ#206	ND		ug/kg	1.69	0.843	2
CI10-BZ#209	ND		ug/kg	1.69	0.843	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	41		30-150
Pyrene-d10	47		30-150
Benzo(b)fluoranthene-d12	44		30-150
DBOB	51		30-150
BZ 198	44		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-55 D
 Client ID: MN COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/23/17 21:30

Analytical Date: 11/03/17 01:46

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/26/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.3	9.17	2
Acenaphthylene	ND		ug/kg	18.3	9.17	2
Acenaphthene	ND		ug/kg	18.3	9.17	2
Fluorene	ND		ug/kg	18.3	9.17	2
Phenanthrene	25.8		ug/kg	18.3	9.17	2
Anthracene	ND		ug/kg	18.3	9.17	2
Fluoranthene	97.2		ug/kg	18.3	9.17	2
Pyrene	77.8		ug/kg	18.3	9.17	2
Benz(a)anthracene	41.0		ug/kg	18.3	9.17	2
Chrysene	25.7		ug/kg	18.3	9.17	2
Benzo(b)fluoranthene	23.9		ug/kg	18.3	9.17	2
Benzo(k)fluoranthene	9.94	J	ug/kg	18.3	9.17	2
Benzo(a)pyrene	11.0	J	ug/kg	18.3	9.17	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.3	9.17	2
Dibenz(a,h)anthracene	ND		ug/kg	18.3	9.17	2
Benzo(ghi)perylene	ND		ug/kg	18.3	9.17	2
Cl2-BZ#8	ND		ug/kg	1.83	0.917	2
Cl3-BZ#18	ND		ug/kg	1.83	0.917	2
Cl3-BZ#28	ND		ug/kg	1.83	0.917	2
Cl4-BZ#44	3.07		ug/kg	1.83	0.917	2
Cl4-BZ#49	1.20	J	ug/kg	1.83	0.917	2
Cl4-BZ#52	2.90		ug/kg	1.83	0.917	2
Cl4-BZ#66	ND		ug/kg	1.83	0.917	2
Cl5-BZ#87	ND		ug/kg	1.83	0.917	2
Cl5-BZ#101	2.78		ug/kg	1.83	0.917	2
Cl5-BZ#105	ND		ug/kg	1.83	0.917	2
Cl5-BZ#118	ND		ug/kg	1.83	0.917	2
Cl6-BZ#128	ND		ug/kg	1.83	0.917	2
Cl6-BZ#138	1.08	J	ug/kg	1.83	0.917	2
Cl6-BZ#153	0.928	J	ug/kg	1.83	0.917	2



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-55 D
 Client ID: MN COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.83	0.917	2
CI7-BZ#180	ND		ug/kg	1.83	0.917	2
CI7-BZ#183	ND		ug/kg	1.83	0.917	2
CI7-BZ#184	ND		ug/kg	1.83	0.917	2
CI7-BZ#187	ND		ug/kg	1.83	0.917	2
CI8-BZ#195	ND		ug/kg	1.83	0.917	2
CI9-BZ#206	ND		ug/kg	1.83	0.917	2
CI10-BZ#209	ND		ug/kg	1.83	0.917	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	42		30-150
Pyrene-d10	47		30-150
Benzo(b)fluoranthene-d12	45		30-150
DBOB	50		30-150
BZ 198	49		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 10/26/17 15:04

Extraction Date: 10/23/17 17:45

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 10/25/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-20 Batch: WG1055360-1					
Naphthalene	ND		ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	ND		ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	ND		ug/kg	1.00	0.500
Cl3-BZ#18	ND		ug/kg	1.00	0.500
Cl3-BZ#28	ND		ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	ND		ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 10/26/17 15:04

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 10/23/17 17:45

Cleanup Method: EPA 3630

Cleanup Date: 10/25/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-20 Batch: WG1055360-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	76		30-150
Pyrene-d10	87		30-150
Benzo(b)fluoranthene-d12	90		30-150
DBOB	80		30-150
BZ 198	83		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/07/17 17:07

Extraction Date: 10/23/17 19:00

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 21-40 Batch: WG1055393-1					
Naphthalene	ND		ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	ND		ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	ND		ug/kg	1.00	0.500
Cl3-BZ#18	ND		ug/kg	1.00	0.500
Cl3-BZ#28	ND		ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	ND		ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/07/17 17:07

Extraction Date: 10/23/17 19:00

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 21-40 Batch: WG1055393-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	72		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	79		30-150
DBOB	74		30-150
BZ 198	75		30-150



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 10/27/17 13:19

Extraction Date: 10/23/17 21:30

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 41-55 Batch: WG1055419-1					
Naphthalene	ND		ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	ND		ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	ND		ug/kg	1.00	0.500
Cl3-BZ#18	ND		ug/kg	1.00	0.500
Cl3-BZ#28	ND		ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	ND		ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 10/27/17 13:19

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 10/23/17 21:30

Cleanup Method: EPA 3630

Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 41-55 Batch: WG1055419-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		30-150
Pyrene-d10	79		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	75		30-150
BZ 198	81		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 Batch: WG1055360-2 WG1055360-3								
Naphthalene	71		81		50-120	13		30
Acenaphthylene	68		79		50-120	15		30
Acenaphthene	65		75		50-120	14		30
Fluorene	69		80		50-120	15		30
Phenanthrene	73		84		50-120	14		30
Anthracene	74		84		50-120	13		30
Fluoranthene	76		86		50-120	12		30
Pyrene	73		82		50-120	12		30
Benz(a)anthracene	82		93		50-120	13		30
Chrysene	79		88		50-120	11		30
Benzo(b)fluoranthene	83		96		50-120	15		30
Benzo(k)fluoranthene	83		90		50-120	8		30
Benzo(a)pyrene	80		89		50-120	11		30
Indeno(1,2,3-cd)Pyrene	74		85		50-120	14		30
Dibenz(a,h)anthracene	82		92		50-120	11		30
Benzo(ghi)perylene	86		96		50-120	11		30
Cl2-BZ#8	66		75		50-120	13		30
Cl3-BZ#18	68		77		50-120	12		30
Cl3-BZ#28	68		78		50-120	14		30
Cl4-BZ#44	72		81		50-120	12		30
Cl4-BZ#49	70		80		50-120	13		30
Cl4-BZ#52	69		80		50-120	15		30
Cl4-BZ#66	72		82		50-120	13		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 Batch: WG1055360-2 WG1055360-3								
Cl5-BZ#87	72		81		50-120	12		30
Cl5-BZ#101	73		82		50-120	12		30
Cl5-BZ#105	74		83		50-120	11		30
Cl5-BZ#118	72		80		50-120	11		30
Cl6-BZ#128	74		84		50-120	13		30
Cl6-BZ#138	75		84		50-120	11		30
Cl6-BZ#153	74		84		50-120	13		30
Cl7-BZ#170	75		85		50-120	13		30
Cl7-BZ#180	73		80		50-120	9		30
Cl7-BZ#183	70		77		50-120	10		30
Cl7-BZ#184	73		82		50-120	12		30
Cl7-BZ#187	71		81		50-120	13		30
Cl8-BZ#195	77		88		50-120	13		30
Cl9-BZ#206	78		90		50-120	14		30
Cl10-BZ#209	77		87		50-120	12		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	75		84		30-150
Pyrene-d10	85		92		30-150
Benzo(b)fluoranthene-d12	90		98		30-150
DBOB	76		84		30-150
BZ 198	79		85		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 Batch: WG1055393-2 WG1055393-3								
Naphthalene	66		64		50-120	3		30
Acenaphthylene	64		62		50-120	3		30
Acenaphthene	62		60		50-120	3		30
Fluorene	65		62		50-120	5		30
Phenanthrene	70		66		50-120	6		30
Anthracene	70		68		50-120	3		30
Fluoranthene	70		67		50-120	4		30
Pyrene	70		68		50-120	3		30
Benz(a)anthracene	78		76		50-120	3		30
Chrysene	72		69		50-120	4		30
Benzo(b)fluoranthene	78		77		50-120	1		30
Benzo(k)fluoranthene	67		65		50-120	3		30
Benzo(a)pyrene	76		73		50-120	4		30
Indeno(1,2,3-cd)Pyrene	76		70		50-120	8		30
Dibenz(a,h)anthracene	76		74		50-120	3		30
Benzo(ghi)perylene	78		76		50-120	3		30
Cl2-BZ#8	63		63		50-120	0		30
Cl3-BZ#18	63		62		50-120	2		30
Cl3-BZ#28	65		65		50-120	0		30
Cl4-BZ#44	69		68		50-120	1		30
Cl4-BZ#49	67		65		50-120	3		30
Cl4-BZ#52	66		66		50-120	0		30
Cl4-BZ#66	69		67		50-120	3		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 Batch: WG1055393-2 WG1055393-3								
Cl5-BZ#87	67		67		50-120	0		30
Cl5-BZ#101	68		67		50-120	1		30
Cl5-BZ#105	71		69		50-120	3		30
Cl5-BZ#118	67		66		50-120	2		30
Cl6-BZ#128	70		68		50-120	3		30
Cl6-BZ#138	70		69		50-120	1		30
Cl6-BZ#153	68		68		50-120	0		30
Cl7-BZ#170	72		71		50-120	1		30
Cl7-BZ#180	65		64		50-120	2		30
Cl7-BZ#183	64		63		50-120	2		30
Cl7-BZ#184	65		64		50-120	2		30
Cl7-BZ#187	66		65		50-120	2		30
Cl8-BZ#195	72		72		50-120	0		30
Cl9-BZ#206	74		73		50-120	1		30
Cl10-BZ#209	72		71		50-120	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	68		64		30-150
Pyrene-d10	79		75		30-150
Benzo(b)fluoranthene-d12	76		73		30-150
DBOB	73		70		30-150
BZ 198	74		69		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 Batch: WG1055419-2 WG1055419-3								
Naphthalene	68		69		50-120	1		30
Acenaphthylene	70		67		50-120	4		30
Acenaphthene	69		65		50-120	6		30
Fluorene	76		68		50-120	11		30
Phenanthrene	82		76		50-120	8		30
Anthracene	82		74		50-120	10		30
Fluoranthene	86		80		50-120	7		30
Pyrene	84		76		50-120	10		30
Benz(a)anthracene	97		88		50-120	10		30
Chrysene	88		82		50-120	7		30
Benzo(b)fluoranthene	92		86		50-120	7		30
Benzo(k)fluoranthene	90		84		50-120	7		30
Benzo(a)pyrene	92		86		50-120	7		30
Indeno(1,2,3-cd)Pyrene	93		88		50-120	6		30
Dibenz(a,h)anthracene	94		88		50-120	7		30
Benzo(ghi)perylene	98		91		50-120	7		30
Cl2-BZ#8	74		64		50-120	14		30
Cl3-BZ#18	74		65		50-120	13		30
Cl3-BZ#28	76		67		50-120	13		30
Cl4-BZ#44	80		70		50-120	13		30
Cl4-BZ#49	77		69		50-120	11		30
Cl4-BZ#52	80		70		50-120	13		30
Cl4-BZ#66	81		72		50-120	12		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 Batch: WG1055419-2 WG1055419-3								
Cl5-BZ#87	79		72		50-120	9		30
Cl5-BZ#101	81		72		50-120	12		30
Cl5-BZ#105	80		74		50-120	8		30
Cl5-BZ#118	80		72		50-120	11		30
Cl6-BZ#128	82		76		50-120	8		30
Cl6-BZ#138	82		76		50-120	8		30
Cl6-BZ#153	81		74		50-120	9		30
Cl7-BZ#170	85		80		50-120	6		30
Cl7-BZ#180	79		73		50-120	8		30
Cl7-BZ#183	78		71		50-120	9		30
Cl7-BZ#184	80		74		50-120	8		30
Cl7-BZ#187	80		74		50-120	8		30
Cl8-BZ#195	88		82		50-120	7		30
Cl9-BZ#206	91		84		50-120	8		30
Cl10-BZ#209	87		81		50-120	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	69		66		30-150
Pyrene-d10	90		80		30-150
Benzo(b)fluoranthene-d12	88		82		30-150
DBOB	88		75		30-150
BZ 198	86		79		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: MN NATIVE BACKGROUND REP A Associated sample(s): 01-20 QC Batch ID: WG1055360-6 WG1055360-7 QC Sample: L1735126-01 Client												
Naphthalene	ND	494	304	62		360	74		50-120	17		30
Acenaphthylene	ND	494	308	62		353	72		50-120	14		30
Acenaphthene	ND	494	290	59		331	68		50-120	13		30
Fluorene	ND	494	305	62		347	71		50-120	13		30
Phenanthrene	ND	494	388	79		418	85		50-120	7		30
Anthracene	ND	494	265	54		306	63		50-120	14		30
Fluoranthene	ND	494	334	68		368	75		50-120	10		30
Pyrene	ND	494	318	64		348	71		50-120	9		30
Benz(a)anthracene	ND	494	423	86		470	96		50-120	11		30
Chrysene	ND	494	275	56		304	62		50-120	10		30
Benzo(b)fluoranthene	ND	494	404	82		458	94		50-120	13		30
Benzo(k)fluoranthene	ND	494	255	52		280	57		50-120	9		30
Benzo(a)pyrene	ND	494	295	60		339	69		50-120	14		30
Indeno(1,2,3-cd)Pyrene	ND	494	416	84		464	95		50-120	11		30
Dibenz(a,h)anthracene	ND	494	354	72		394	81		50-120	11		30
Benzo(ghi)perylene	ND	494	358	73		361	74		50-120	1		30
Cl2-BZ#8	ND	98.8	56.5	57		60.1	61		50-120	6		30
Cl3-BZ#18	ND	98.8	129	131	Q	122	125	Q	50-120	6		30
Cl3-BZ#28	ND	98.8	92.0	93		82.4	84		50-120	11		30
Cl4-BZ#44	ND	98.8	61.4	62		65.0	66		50-120	6		30
Cl4-BZ#49	ND	98.8	45.8	46	Q	49.5	51		50-120	8		30
Cl4-BZ#52	ND	98.8	68.0	69		72.0	74		50-120	6		30
Cl4-BZ#66	ND	98.8	60.9	62		65.1	67		50-120	7		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: MN NATIVE BACKGROUND REP A Associated sample(s): 01-20 QC Batch ID: WG1055360-6 WG1055360-7 QC Sample: L1735126-01 Client												
CI5-BZ#87	ND	98.8	59.2	60		63.2	65		50-120	7		30
CI5-BZ#101	ND	98.8	61.4	62		65.7	67		50-120	7		30
CI5-BZ#105	ND	98.8	51.7	52		54.2	55		50-120	5		30
CI5-BZ#118	ND	98.8	57.8	59		62.9	64		50-120	8		30
CI6-BZ#128	ND	98.8	63.9	65		68.8	70		50-120	7		30
CI6-BZ#138	ND	98.8	62.3	63		66.5	68		50-120	7		30
CI6-BZ#153	ND	98.8	64.3	65		68.9	70		50-120	7		30
CI7-BZ#170	ND	98.8	65.3	66		70.1	72		50-120	7		30
CI7-BZ#180	ND	98.8	59.8	61		64.2	66		50-120	7		30
CI7-BZ#183	ND	98.8	45.5	46	Q	49.1	50		50-120	8		30
CI7-BZ#184	ND	98.8	61.8	63		66.0	68		50-120	7		30
CI7-BZ#187	ND	98.8	74.6	76		79.5	81		50-120	6		30
CI8-BZ#195	ND	98.8	67.1	68		72.0	74		50-120	7		30
CI9-BZ#206	ND	98.8	69.8	71		76.4	78		50-120	9		30
CI10-BZ#209	ND	98.8	63.4	64		69.1	71		50-120	9		30

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	67		77		30-150
BZ 198	68		61		30-150
Benzo(b)fluoranthene-d12	74		82		30-150
DBOB	73		76		30-150
Pyrene-d10	73		80		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055393-6 WG1055393-7 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A												
Naphthalene	ND	464	291	63		268	60		50-120	8		30
Acenaphthylene	ND	464	304	66		277	62		50-120	9		30
Acenaphthene	ND	464	288	62		262	59		50-120	9		30
Fluorene	ND	464	302	65		272	61		50-120	10		30
Phenanthrene	ND	464	352	76		317	71		50-120	10		30
Anthracene	ND	464	297	64		274	62		50-120	8		30
Fluoranthene	20.2	464	348	71		316	67		50-120	10		30
Pyrene	19.5	464	331	67		295	62		50-120	12		30
Benz(a)anthracene	ND	464	396	85		353	80		50-120	11		30
Chrysene	ND	464	300	65		277	62		50-120	8		30
Benzo(b)fluoranthene	ND	464	393	85		347	78		50-120	12		30
Benzo(k)fluoranthene	ND	464	264	57		252	57		50-120	5		30
Benzo(a)pyrene	ND	464	317	68		332	75		50-120	5		30
Indeno(1,2,3-cd)Pyrene	17.1J	464	353	76		326	73		50-120	8		30
Dibenz(a,h)anthracene	ND	464	339	73		308	69		50-120	10		30
Benzo(ghi)perylene	ND	464	344	74		314	71		50-120	9		30
Cl2-BZ#8	ND	92.8	58.1	63		52.1	59		50-120	11		30
Cl3-BZ#18	ND	92.8	125	135	Q	110	124	Q	50-120	13		30
Cl3-BZ#28	ND	92.8	80.9	87		71.2	80		50-120	13		30
Cl4-BZ#44	ND	92.8	64.4	69		58.0	65		50-120	10		30
Cl4-BZ#49	ND	92.8	51.4	55		47.0	53		50-120	9		30
Cl4-BZ#52	ND	92.8	65.9	71		58.4	66		50-120	12		30
Cl4-BZ#66	ND	92.8	63.5	69		58.0	65		50-120	9		30

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055393-6 WG1055393-7 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A												
CI5-BZ#87	ND	92.8	62.2	67		56.9	64		50-120	9		30
CI5-BZ#101	2.01	92.8	67.1	70		61.0	66		50-120	10		30
CI5-BZ#105	ND	92.8	58.9	64		53.5	60		50-120	10		30
CI5-BZ#118	ND	92.8	63.4	68		56.2	63		50-120	12		30
CI6-BZ#128	ND	92.8	63.8	69		56.9	64		50-120	11		30
CI6-BZ#138	ND	92.8	64.7	70		58.0	65		50-120	11		30
CI6-BZ#153	ND	92.8	68.4	74		62.3	70		50-120	9		30
CI7-BZ#170	ND	92.8	65.9	71		59.7	67		50-120	10		30
CI7-BZ#180	ND	92.8	61.1	66		54.6	62		50-120	11		30
CI7-BZ#183	ND	92.8	54.0	58		48.4	55		50-120	11		30
CI7-BZ#184	ND	92.8	64.5	70		58.5	66		50-120	10		30
CI7-BZ#187	ND	92.8	66.7	72		60.9	69		50-120	9		30
CI8-BZ#195	ND	92.8	66.4	72		60.1	68		50-120	10		30
CI9-BZ#206	ND	92.8	67.5	73		59.8	67		50-120	12		30
CI10-BZ#209	ND	92.8	63.6	69		57.6	65		50-120	10		30

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
2-Methylnaphthalene-d10	68		64		30-150
BZ 198	74		71		30-150
Benzo(b)fluoranthene-d12	73		68		30-150
DBOB	76		68		30-150
Pyrene-d10	76		70		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: MN COMPOSITE 6 REP A Associated sample(s): 41-55 QC Batch ID: WG1055419-6 WG1055419-7 QC Sample: L1735126-41 Client												
Naphthalene	ND	437	208	48	Q	178	40	Q	50-120	16		30
Acenaphthylene	ND	437	211	48	Q	182	41	Q	50-120	15		30
Acenaphthene	11.2J	437	203	46	Q	173	39	Q	50-120	16		30
Fluorene	ND	437	208	48	Q	183	41	Q	50-120	13		30
Phenanthrene	23.1	437	270	57		239	49	Q	50-120	12		30
Anthracene	ND	437	186	43	Q	169	38	Q	50-120	10		30
Fluoranthene	82.4	437	317	54		275	43	Q	50-120	14		30
Pyrene	68.4	437	293	51		248	40	Q	50-120	17		30
Benz(a)anthracene	41.5	437	334	67		278	53		50-120	18		30
Chrysene	39.3	437	222	42	Q	198	36	Q	50-120	11		30
Benzo(b)fluoranthene	27.5	437	296	61		253	51		50-120	16		30
Benzo(k)fluoranthene	13.1J	437	196	45	Q	166	37	Q	50-120	17		30
Benzo(a)pyrene	17.6J	437	287	66		198	45	Q	50-120	37	Q	30
Indeno(1,2,3-cd)Pyrene	15.6J	437	275	63		229	52		50-120	18		30
Dibenz(a,h)anthracene	ND	437	244	56		207	47	Q	50-120	16		30
Benzo(ghi)perylene	ND	437	253	58		215	48	Q	50-120	16		30
Cl2-BZ#8	ND	87.4	41.5	48	Q	38.8	44	Q	50-120	7		30
Cl3-BZ#18	ND	87.4	82.0	94		90.2	101		50-120	10		30
Cl3-BZ#28	ND	87.4	76.2	87		65.6	74		50-120	15		30
Cl4-BZ#44	2.44	87.4	47.2	51		43.2	46	Q	50-120	9		30
Cl4-BZ#49	1.52J	87.4	35.1	40	Q	33.5	38	Q	50-120	5		30
Cl4-BZ#52	3.16	87.4	54.2	58		49.2	52		50-120	10		30
Cl4-BZ#66	1.59J	87.4	48.0	55		44.5	50		50-120	8		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055419-6 WG1055419-7 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A												
CI5-BZ#87	ND	87.4	44.8	51		42.0	47	Q	50-120	6		30
CI5-BZ#101	4.20	87.4	50.3	53		46.5	48	Q	50-120	8		30
CI5-BZ#105	1.32J	87.4	37.0	42	Q	35.8	40	Q	50-120	3		30
CI5-BZ#118	1.22J	87.4	46.6	53		43.8	49	Q	50-120	6		30
CI6-BZ#128	ND	87.4	45.1	52		42.1	47	Q	50-120	7		30
CI6-BZ#138	1.65J	87.4	45.9	53		43.2	49	Q	50-120	6		30
CI6-BZ#153	1.58J	87.4	49.6	57		46.7	53		50-120	6		30
CI7-BZ#170	ND	87.4	46.5	53		43.6	49	Q	50-120	6		30
CI7-BZ#180	ND	87.4	42.5	49	Q	39.3	44	Q	50-120	8		30
CI7-BZ#183	ND	87.4	34.1	39	Q	33.1	37	Q	50-120	3		30
CI7-BZ#184	ND	87.4	46.0	53		43.0	48	Q	50-120	7		30
CI7-BZ#187	ND	87.4	50.7	58		46.1	52		50-120	10		30
CI8-BZ#195	ND	87.4	47.0	54		43.8	49	Q	50-120	7		30
CI9-BZ#206	ND	87.4	47.7	55		45.6	51		50-120	5		30
CI10-BZ#209	ND	87.4	44.4	51		41.8	47	Q	50-120	6		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	49		40		30-150
BZ 198	56		53		30-150
Benzo(b)fluoranthene-d12	51		42		30-150
DBOB	58		53		30-150
Pyrene-d10	56		45		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055360-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	ND	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	ND	ND	ug/kg	NC		30
Pyrene	ND	ND	ug/kg	NC		30
Benz(a)anthracene	ND	ND	ug/kg	NC		30
Chrysene	ND	ND	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	ND	ND	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055360-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						
CI4-BZ#52	ND	ND	ug/kg	NC		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	ND	ND	ug/kg	NC		30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	ND	ND	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	ND	ND	ug/kg	NC		30
CI6-BZ#153	ND	ND	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		76		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055360-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	82		80		30-150
Benzo(b)fluoranthene-d12	79		79		30-150
DBOB	83		79		30-150
BZ 198	77		74		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055393-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	ND	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	20.2	26.2	ug/kg	26		30
Pyrene	19.5	25.8	ug/kg	28		30
Benz(a)anthracene	ND	12.0J	ug/kg	NC		30
Chrysene	ND	10.6J	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	17.1J	19.2J	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055393-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						
CI4-BZ#52	ND	ND	ug/kg	NC		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	2.01	2.20	ug/kg	9		30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	ND	ND	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	ND	ND	ug/kg	NC		30
CI6-BZ#153	ND	ND	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	75		66		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055393-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	83		72		30-150
Benzo(b)fluoranthene-d12	79		69		30-150
DBOB	86		76		30-150
BZ 198	83		76		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055419-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	11.2J	14.1J	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	23.1	26.6	ug/kg	14		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	82.4	96.7	ug/kg	16		30
Pyrene	68.4	80.9	ug/kg	17		30
Benz(a)anthracene	41.5	45.6	ug/kg	9		30
Chrysene	39.3	44.0	ug/kg	11		30
Benzo(b)fluoranthene	27.5	28.0	ug/kg	2		30
Benzo(k)fluoranthene	13.1J	14.1J	ug/kg	NC		30
Benzo(a)pyrene	17.6J	20.7	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	15.6J	15.8J	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	10.2J	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	2.44	1.88	ug/kg	26		30
Cl4-BZ#49	1.52J	1.78J	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055419-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
CI4-BZ#52	3.16	3.38	ug/kg	7		30
CI4-BZ#66	1.59J	2.01	ug/kg	NC		30
CI5-BZ#87	ND	1.20J	ug/kg	NC		30
CI5-BZ#101	4.20	3.88	ug/kg	8		30
CI5-BZ#105	1.32J	1.70J	ug/kg	NC		30
CI5-BZ#118	1.22J	1.46J	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	1.65J	1.69J	ug/kg	NC		30
CI6-BZ#153	1.58J	1.63J	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	47		49		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055419-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	56		56		30-150
Benzo(b)fluoranthene-d12	50		51		30-150
DBOB	57		59		30-150
BZ 198	52		54		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055360-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	81		40-140
Fluoranthene	80		40-140
Pyrene	84		40-140
Chrysene	71		40-140
Cl3-BZ#28	54		40-140
Cl4-BZ#44	82		40-140
Cl4-BZ#49	51		40-140
Cl4-BZ#52	47		40-140
Cl4-BZ#66	84		40-140
Cl5-BZ#87	44		40-140
Cl5-BZ#101	58		40-140
Cl5-BZ#105	113		40-140
Cl5-BZ#118	88		40-140
Cl6-BZ#138	102		40-140
Cl6-BZ#153	72		40-140
Cl7-BZ#187	48		40-140
2-Methylnaphthalene-d10 (Surrogate)	75		75-125
Pyrene-d10 (Surrogate)	81		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	81		75-125
DBOB (Surrogate)	86		75-125
BZ 198 (Surrogate)	82		75-125

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055393-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	72		40-140
Fluoranthene	78		40-140
Pyrene	70		40-140
Chrysene	51		40-140
Cl3-BZ#28	898	Q	40-140
Cl4-BZ#44	88		40-140
Cl4-BZ#49	65		40-140
Cl4-BZ#52	51		40-140
Cl4-BZ#66	48		40-140
Cl5-BZ#87	76		40-140
Cl5-BZ#101	86		40-140
Cl5-BZ#105	134		40-140
Cl5-BZ#118	46		40-140
Cl6-BZ#138	129		40-140
Cl6-BZ#153	63		40-140
Cl7-BZ#187	46		40-140
2-Methylnaphthalene-d10 (Surrogate)	73		75-125
Pyrene-d10 (Surrogate)	78		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	77		75-125
DBOB (Surrogate)	77		75-125
BZ 198 (Surrogate)	72		75-125

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055419-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	78		40-140
Fluoranthene	86		40-140
Pyrene	85		40-140
Chrysene	86		40-140
Cl3-BZ#28	448	Q	40-140
Cl4-BZ#44	116		40-140
Cl4-BZ#49	64		40-140
Cl4-BZ#52	90		40-140
Cl4-BZ#66	99		40-140
Cl5-BZ#87	74		40-140
Cl5-BZ#101	64		40-140
Cl5-BZ#105	120		40-140
Cl5-BZ#118	81		40-140
Cl6-BZ#138	130		40-140
Cl6-BZ#153	80		40-140
Cl7-BZ#187	60		40-140
2-Methylnaphthalene-d10 (Surrogate)	72		75-125
Pyrene-d10 (Surrogate)	81		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	79		75-125
DBOB (Surrogate)	95		75-125
BZ 198 (Surrogate)	92		75-125

PESTICIDES

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-01
 Client ID: MN NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/07/17 18:47
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.969	0.969	1	A
gamma-BHC	ND		ug/kg	0.484	0.484	1	A
Heptachlor	ND		ug/kg	0.484	0.484	1	A
Aldrin	ND		ug/kg	0.484	0.484	1	A
Heptachlor epoxide	ND		ug/kg	0.969	0.969	1	B
Oxychlordane	ND		ug/kg	0.969	0.969	1	B
trans-Chlordane	ND		ug/kg	0.484	0.484	1	A
Endosulfan I	ND		ug/kg	0.484	0.484	1	A
cis-Chlordane	ND		ug/kg	0.484	0.484	1	A
trans-Nonachlor	ND		ug/kg	0.484	0.484	1	A
4,4'-DDE	ND	P	ug/kg	0.484	0.484	1	B
Dieldrin	ND		ug/kg	0.484	0.484	1	A
Endrin	0.601	IP	ug/kg	0.484	0.484	1	A
Endosulfan II	ND		ug/kg	0.484	0.484	1	A
4,4'-DDD	ND		ug/kg	0.484	0.484	1	A
cis-Nonachlor	ND		ug/kg	0.484	0.484	1	A
4,4'-DDT	ND		ug/kg	0.484	0.484	1	A
Methoxychlor	ND		ug/kg	4.84	4.84	1	A
Toxaphene	ND		ug/kg	24.3	24.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	79		30-150	A
DBOB	56		30-150	B
BZ 198	76		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-02
 Client ID: MN NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/07/17 22:46
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.965	0.965	1	A
gamma-BHC	ND		ug/kg	0.483	0.483	1	A
Heptachlor	ND		ug/kg	0.483	0.483	1	A
Aldrin	ND		ug/kg	0.483	0.483	1	A
Heptachlor epoxide	ND		ug/kg	0.965	0.965	1	B
Oxychlordane	ND		ug/kg	0.965	0.965	1	B
trans-Chlordane	ND		ug/kg	0.483	0.483	1	A
Endosulfan I	ND		ug/kg	0.483	0.483	1	A
cis-Chlordane	ND		ug/kg	0.483	0.483	1	A
trans-Nonachlor	ND		ug/kg	0.483	0.483	1	A
4,4'-DDE	ND		ug/kg	0.483	0.483	1	A
Dieldrin	ND		ug/kg	0.483	0.483	1	A
Endrin	ND		ug/kg	0.483	0.483	1	A
Endosulfan II	ND		ug/kg	0.483	0.483	1	A
4,4'-DDD	ND		ug/kg	0.483	0.483	1	A
cis-Nonachlor	ND		ug/kg	0.483	0.483	1	A
4,4'-DDT	ND		ug/kg	0.483	0.483	1	A
Methoxychlor	ND		ug/kg	4.83	4.83	1	A
Toxaphene	ND		ug/kg	24.2	24.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		30-150	A
BZ 198	66		30-150	A
DBOB	71		30-150	B
BZ 198	68		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-03
 Client ID: MN NATIVE BACKGROUND REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/07/17 23:20
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.882	0.882	1	A
gamma-BHC	ND		ug/kg	0.441	0.441	1	A
Heptachlor	ND		ug/kg	0.441	0.441	1	A
Aldrin	ND		ug/kg	0.441	0.441	1	A
Heptachlor epoxide	ND		ug/kg	0.882	0.882	1	B
Oxychlordane	ND		ug/kg	0.882	0.882	1	B
trans-Chlordane	ND		ug/kg	0.441	0.441	1	A
Endosulfan I	ND		ug/kg	0.441	0.441	1	A
cis-Chlordane	ND		ug/kg	0.441	0.441	1	A
trans-Nonachlor	ND		ug/kg	0.441	0.441	1	A
4,4'-DDE	ND		ug/kg	0.441	0.441	1	A
Dieldrin	ND		ug/kg	0.441	0.441	1	A
Endrin	0.770	IP	ug/kg	0.441	0.441	1	A
Endosulfan II	ND		ug/kg	0.441	0.441	1	A
4,4'-DDD	ND		ug/kg	0.441	0.441	1	A
cis-Nonachlor	ND		ug/kg	0.441	0.441	1	A
4,4'-DDT	ND		ug/kg	0.441	0.441	1	A
Methoxychlor	ND		ug/kg	4.41	4.41	1	A
Toxaphene	ND		ug/kg	22.1	22.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	77		30-150	A
DBOB	70		30-150	B
BZ 198	79		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-04
 Client ID: MN NATIVE BACKGROUND REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/07/17 23:54
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.926	0.926	1	A
gamma-BHC	ND		ug/kg	0.463	0.463	1	A
Heptachlor	ND		ug/kg	0.463	0.463	1	A
Aldrin	ND		ug/kg	0.463	0.463	1	A
Heptachlor epoxide	ND		ug/kg	0.926	0.926	1	B
Oxychlordane	ND		ug/kg	0.926	0.926	1	B
trans-Chlordane	ND		ug/kg	0.463	0.463	1	A
Endosulfan I	ND		ug/kg	0.463	0.463	1	A
cis-Chlordane	ND		ug/kg	0.463	0.463	1	A
trans-Nonachlor	ND		ug/kg	0.463	0.463	1	A
4,4'-DDE	ND		ug/kg	0.463	0.463	1	A
Dieldrin	ND		ug/kg	0.463	0.463	1	A
Endrin	0.467	IP	ug/kg	0.463	0.463	1	A
Endosulfan II	ND		ug/kg	0.463	0.463	1	A
4,4'-DDD	ND		ug/kg	0.463	0.463	1	A
cis-Nonachlor	ND		ug/kg	0.463	0.463	1	A
4,4'-DDT	ND		ug/kg	0.463	0.463	1	A
Methoxychlor	ND		ug/kg	4.63	4.63	1	A
Toxaphene	ND		ug/kg	23.2	23.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	78		30-150	A
DBOB	63		30-150	B
BZ 198	79		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-05
 Client ID: MN NATIVE BACKGROUND REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 00:28
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.909	0.909	1	A
gamma-BHC	ND		ug/kg	0.454	0.454	1	A
Heptachlor	ND		ug/kg	0.454	0.454	1	A
Aldrin	ND		ug/kg	0.454	0.454	1	A
Heptachlor epoxide	ND		ug/kg	0.909	0.909	1	B
Oxychlordane	ND		ug/kg	0.909	0.909	1	B
trans-Chlordane	ND		ug/kg	0.454	0.454	1	A
Endosulfan I	ND		ug/kg	0.454	0.454	1	A
cis-Chlordane	ND		ug/kg	0.454	0.454	1	A
trans-Nonachlor	ND		ug/kg	0.454	0.454	1	A
4,4'-DDE	ND		ug/kg	0.454	0.454	1	B
Dieldrin	ND		ug/kg	0.454	0.454	1	A
Endrin	0.667	IP	ug/kg	0.454	0.454	1	A
Endosulfan II	ND		ug/kg	0.454	0.454	1	A
4,4'-DDD	ND		ug/kg	0.454	0.454	1	A
cis-Nonachlor	ND		ug/kg	0.454	0.454	1	A
4,4'-DDT	ND		ug/kg	0.454	0.454	1	A
Methoxychlor	ND		ug/kg	4.54	4.54	1	A
Toxaphene	ND		ug/kg	22.8	22.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	71		30-150	A
BZ 198	72		30-150	A
DBOB	67		30-150	B
BZ 198	76		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-06
 Client ID: MN LABORATORY CONTROL REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 01:02
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.893	0.893	1	A
gamma-BHC	ND		ug/kg	0.446	0.446	1	A
Heptachlor	ND		ug/kg	0.446	0.446	1	A
Aldrin	ND		ug/kg	0.446	0.446	1	A
Heptachlor epoxide	ND		ug/kg	0.893	0.893	1	B
Oxychlordane	ND		ug/kg	0.893	0.893	1	B
trans-Chlordane	ND		ug/kg	0.446	0.446	1	A
Endosulfan I	ND		ug/kg	0.446	0.446	1	A
cis-Chlordane	ND		ug/kg	0.446	0.446	1	A
trans-Nonachlor	ND		ug/kg	0.446	0.446	1	A
4,4'-DDE	ND		ug/kg	0.446	0.446	1	B
Dieldrin	ND		ug/kg	0.446	0.446	1	A
Endrin	0.454	IP	ug/kg	0.446	0.446	1	A
Endosulfan II	ND		ug/kg	0.446	0.446	1	A
4,4'-DDD	ND		ug/kg	0.446	0.446	1	A
cis-Nonachlor	ND		ug/kg	0.446	0.446	1	A
4,4'-DDT	ND		ug/kg	0.446	0.446	1	A
Methoxychlor	ND		ug/kg	4.46	4.46	1	A
Toxaphene	ND		ug/kg	22.4	22.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	69		30-150	A
BZ 198	76		30-150	A
DBOB	59		30-150	B
BZ 198	75		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-07
 Client ID: MN LABORATORY CONTROL REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 01:36
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.859	0.859	1	A
gamma-BHC	ND		ug/kg	0.430	0.430	1	A
Heptachlor	ND		ug/kg	0.430	0.430	1	A
Aldrin	ND		ug/kg	0.430	0.430	1	A
Heptachlor epoxide	ND		ug/kg	0.859	0.859	1	B
Oxychlordane	ND		ug/kg	0.859	0.859	1	B
trans-Chlordane	ND		ug/kg	0.430	0.430	1	A
Endosulfan I	ND		ug/kg	0.430	0.430	1	A
cis-Chlordane	ND		ug/kg	0.430	0.430	1	A
trans-Nonachlor	ND		ug/kg	0.430	0.430	1	A
4,4'-DDE	ND		ug/kg	0.430	0.430	1	B
Dieldrin	ND		ug/kg	0.430	0.430	1	A
Endrin	0.509	IP	ug/kg	0.430	0.430	1	A
Endosulfan II	ND		ug/kg	0.430	0.430	1	A
4,4'-DDD	ND		ug/kg	0.430	0.430	1	A
cis-Nonachlor	ND		ug/kg	0.430	0.430	1	A
4,4'-DDT	ND		ug/kg	0.430	0.430	1	A
Methoxychlor	ND		ug/kg	4.30	4.30	1	A
Toxaphene	ND		ug/kg	21.6	21.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	73		30-150	A
BZ 198	82		30-150	A
DBOB	62		30-150	B
BZ 198	83		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-08
 Client ID: MN LABORATORY CONTROL REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 02:10
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.843	0.843	1	A
gamma-BHC	ND		ug/kg	0.422	0.422	1	A
Heptachlor	ND		ug/kg	0.422	0.422	1	A
Aldrin	ND		ug/kg	0.422	0.422	1	A
Heptachlor epoxide	ND		ug/kg	0.843	0.843	1	B
Oxychlordane	ND		ug/kg	0.843	0.843	1	B
trans-Chlordane	ND		ug/kg	0.422	0.422	1	A
Endosulfan I	ND		ug/kg	0.422	0.422	1	A
cis-Chlordane	ND		ug/kg	0.422	0.422	1	A
trans-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDE	ND		ug/kg	0.422	0.422	1	B
Dieldrin	ND		ug/kg	0.422	0.422	1	A
Endrin	0.454	IP	ug/kg	0.422	0.422	1	A
Endosulfan II	ND		ug/kg	0.422	0.422	1	A
4,4'-DDD	ND		ug/kg	0.422	0.422	1	A
cis-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDT	ND		ug/kg	0.422	0.422	1	A
Methoxychlor	ND		ug/kg	4.22	4.22	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	62		30-150	A
BZ 198	76		30-150	A
DBOB	52		30-150	B
BZ 198	76		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-09
 Client ID: MN LABORATORY CONTROL REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 02:44
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.916	0.916	1	A
gamma-BHC	ND		ug/kg	0.458	0.458	1	A
Heptachlor	ND		ug/kg	0.458	0.458	1	A
Aldrin	ND		ug/kg	0.458	0.458	1	A
Heptachlor epoxide	ND		ug/kg	0.916	0.916	1	B
Oxychlordane	ND		ug/kg	0.916	0.916	1	B
trans-Chlordane	ND		ug/kg	0.458	0.458	1	A
Endosulfan I	ND		ug/kg	0.458	0.458	1	A
cis-Chlordane	ND		ug/kg	0.458	0.458	1	A
trans-Nonachlor	ND		ug/kg	0.458	0.458	1	A
4,4'-DDE	ND		ug/kg	0.458	0.458	1	B
Dieldrin	ND		ug/kg	0.458	0.458	1	A
Endrin	0.815	IP	ug/kg	0.458	0.458	1	A
Endosulfan II	ND		ug/kg	0.458	0.458	1	A
4,4'-DDD	ND		ug/kg	0.458	0.458	1	A
cis-Nonachlor	ND		ug/kg	0.458	0.458	1	A
4,4'-DDT	ND		ug/kg	0.458	0.458	1	A
Methoxychlor	ND		ug/kg	4.58	4.58	1	A
Toxaphene	ND		ug/kg	23.0	23.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	57		30-150	A
BZ 198	67		30-150	A
DBOB	49		30-150	B
BZ 198	71		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-10
 Client ID: MN LABORATORY CONTROL REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/28/17 16:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 03:18
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.940	0.940	1	A
gamma-BHC	ND		ug/kg	0.470	0.470	1	A
Heptachlor	ND		ug/kg	0.470	0.470	1	A
Aldrin	ND		ug/kg	0.470	0.470	1	A
Heptachlor epoxide	ND		ug/kg	0.940	0.940	1	B
Oxychlordane	ND		ug/kg	0.940	0.940	1	B
trans-Chlordane	ND		ug/kg	0.470	0.470	1	A
Endosulfan I	ND		ug/kg	0.470	0.470	1	A
cis-Chlordane	ND		ug/kg	0.470	0.470	1	A
trans-Nonachlor	ND		ug/kg	0.470	0.470	1	A
4,4'-DDE	ND		ug/kg	0.470	0.470	1	B
Dieldrin	ND		ug/kg	0.470	0.470	1	A
Endrin	0.499	IP	ug/kg	0.470	0.470	1	A
Endosulfan II	ND		ug/kg	0.470	0.470	1	A
4,4'-DDD	ND		ug/kg	0.470	0.470	1	A
cis-Nonachlor	ND		ug/kg	0.470	0.470	1	A
4,4'-DDT	ND		ug/kg	0.470	0.470	1	A
Methoxychlor	ND		ug/kg	4.70	4.70	1	A
Toxaphene	ND		ug/kg	23.6	23.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		30-150	A
BZ 198	75		30-150	A
DBOB	62		30-150	B
BZ 198	78		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-11
 Client ID: MN CLDS REFERENCE SEDIMENT REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 03:52
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.965	0.965	1	A
gamma-BHC	ND		ug/kg	0.483	0.483	1	A
Heptachlor	ND		ug/kg	0.483	0.483	1	A
Aldrin	ND		ug/kg	0.483	0.483	1	A
Heptachlor epoxide	ND		ug/kg	0.965	0.965	1	B
Oxychlordane	ND		ug/kg	0.965	0.965	1	B
trans-Chlordane	ND		ug/kg	0.483	0.483	1	A
Endosulfan I	ND		ug/kg	0.483	0.483	1	A
cis-Chlordane	ND		ug/kg	0.483	0.483	1	A
trans-Nonachlor	ND		ug/kg	0.483	0.483	1	A
4,4'-DDE	ND		ug/kg	0.483	0.483	1	B
Dieldrin	ND		ug/kg	0.483	0.483	1	A
Endrin	1.97	I	ug/kg	0.483	0.483	1	A
Endosulfan II	ND		ug/kg	0.483	0.483	1	A
4,4'-DDD	ND		ug/kg	0.483	0.483	1	A
cis-Nonachlor	ND		ug/kg	0.483	0.483	1	A
4,4'-DDT	ND		ug/kg	0.483	0.483	1	A
Methoxychlor	ND		ug/kg	4.83	4.83	1	A
Toxaphene	ND		ug/kg	24.2	24.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	77		30-150	A
BZ 198	73		30-150	A
DBOB	64		30-150	B
BZ 198	77		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-12
 Client ID: MN CLDS REFERENCE SEDIMENT REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00

Date Received: 09/29/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Extraction Date: 10/23/17 17:45

Cleanup Method: EPA 3630

Cleanup Date: 10/25/17

Matrix: Tissue

Analytical Method: 1,8081B

Analytical Date: 11/08/17 04:26

Analyst: DP

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.901	0.901	1	A
gamma-BHC	ND		ug/kg	0.450	0.450	1	A
Heptachlor	ND		ug/kg	0.450	0.450	1	A
Aldrin	ND		ug/kg	0.450	0.450	1	A
Heptachlor epoxide	ND		ug/kg	0.901	0.901	1	B
Oxychlordane	ND		ug/kg	0.901	0.901	1	B
trans-Chlordane	ND		ug/kg	0.450	0.450	1	A
Endosulfan I	ND		ug/kg	0.450	0.450	1	A
cis-Chlordane	ND		ug/kg	0.450	0.450	1	A
trans-Nonachlor	ND		ug/kg	0.450	0.450	1	A
4,4'-DDE	0.458		ug/kg	0.450	0.450	1	B
Dieldrin	ND		ug/kg	0.450	0.450	1	A
Endrin	0.480	IP	ug/kg	0.450	0.450	1	A
Endosulfan II	ND		ug/kg	0.450	0.450	1	A
4,4'-DDD	ND		ug/kg	0.450	0.450	1	A
cis-Nonachlor	ND		ug/kg	0.450	0.450	1	A
4,4'-DDT	ND		ug/kg	0.450	0.450	1	A
Methoxychlor	ND		ug/kg	4.50	4.50	1	A
Toxaphene	ND		ug/kg	22.6	22.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	74		30-150	A
BZ 198	71		30-150	A
DBOB	63		30-150	B
BZ 198	76		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-13
 Client ID: MN CLDS REFERENCE SEDIMENT REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 05:00
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.906	0.906	1	A
gamma-BHC	ND		ug/kg	0.453	0.453	1	A
Heptachlor	ND		ug/kg	0.453	0.453	1	A
Aldrin	ND		ug/kg	0.453	0.453	1	A
Heptachlor epoxide	ND		ug/kg	0.906	0.906	1	B
Oxychlordane	ND		ug/kg	0.906	0.906	1	B
trans-Chlordane	ND		ug/kg	0.453	0.453	1	A
Endosulfan I	ND		ug/kg	0.453	0.453	1	A
cis-Chlordane	ND		ug/kg	0.453	0.453	1	A
trans-Nonachlor	ND		ug/kg	0.453	0.453	1	A
4,4'-DDE	ND		ug/kg	0.453	0.453	1	A
Dieldrin	ND		ug/kg	0.453	0.453	1	A
Endrin	1.72	I	ug/kg	0.453	0.453	1	A
Endosulfan II	ND		ug/kg	0.453	0.453	1	A
4,4'-DDD	ND		ug/kg	0.453	0.453	1	A
cis-Nonachlor	ND		ug/kg	0.453	0.453	1	A
4,4'-DDT	ND		ug/kg	0.453	0.453	1	A
Methoxychlor	ND		ug/kg	4.53	4.53	1	A
Toxaphene	ND		ug/kg	22.7	22.7	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		30-150	A
BZ 198	72		30-150	A
DBOB	59		30-150	B
BZ 198	74		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-14
 Client ID: MN CLDS REFERENCE SEDIMENT REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 05:34
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.865	0.865	1	A
gamma-BHC	ND		ug/kg	0.432	0.432	1	A
Heptachlor	ND		ug/kg	0.432	0.432	1	A
Aldrin	ND		ug/kg	0.432	0.432	1	A
Heptachlor epoxide	ND		ug/kg	0.865	0.865	1	B
Oxychlordane	ND		ug/kg	0.865	0.865	1	B
trans-Chlordane	ND		ug/kg	0.432	0.432	1	A
Endosulfan I	ND		ug/kg	0.432	0.432	1	A
cis-Chlordane	ND		ug/kg	0.432	0.432	1	A
trans-Nonachlor	ND		ug/kg	0.432	0.432	1	A
4,4'-DDE	0.466		ug/kg	0.432	0.432	1	A
Dieldrin	ND		ug/kg	0.432	0.432	1	A
Endrin	0.503	IP	ug/kg	0.432	0.432	1	A
Endosulfan II	ND		ug/kg	0.432	0.432	1	A
4,4'-DDD	ND		ug/kg	0.432	0.432	1	A
cis-Nonachlor	ND		ug/kg	0.432	0.432	1	A
4,4'-DDT	ND		ug/kg	0.432	0.432	1	A
Methoxychlor	ND		ug/kg	4.32	4.32	1	A
Toxaphene	ND		ug/kg	21.7	21.7	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	81		30-150	A
BZ 198	71		30-150	A
DBOB	66		30-150	B
BZ 198	75		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-15
 Client ID: MN CLDS REFERENCE SEDIMENT REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 06:08
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.940	0.940	1	A
gamma-BHC	ND		ug/kg	0.470	0.470	1	A
Heptachlor	ND		ug/kg	0.470	0.470	1	A
Aldrin	ND		ug/kg	0.470	0.470	1	A
Heptachlor epoxide	ND		ug/kg	0.940	0.940	1	B
Oxychlordane	ND		ug/kg	0.940	0.940	1	B
trans-Chlordane	ND		ug/kg	0.470	0.470	1	A
Endosulfan I	ND		ug/kg	0.470	0.470	1	A
cis-Chlordane	ND		ug/kg	0.470	0.470	1	A
trans-Nonachlor	ND		ug/kg	0.470	0.470	1	A
4,4'-DDE	ND		ug/kg	0.470	0.470	1	B
Dieldrin	ND		ug/kg	0.470	0.470	1	A
Endrin	6.14	P	ug/kg	0.470	0.470	1	A
Endosulfan II	ND		ug/kg	0.470	0.470	1	A
4,4'-DDD	ND		ug/kg	0.470	0.470	1	A
cis-Nonachlor	ND		ug/kg	0.470	0.470	1	A
4,4'-DDT	ND		ug/kg	0.470	0.470	1	A
Methoxychlor	ND		ug/kg	4.70	4.70	1	A
Toxaphene	ND		ug/kg	23.6	23.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		30-150	A
BZ 198	71		30-150	A
DBOB	63		30-150	B
BZ 198	74		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-16
 Client ID: MN COMPOSITE 1 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 06:42
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.888	0.888	1	A
gamma-BHC	ND		ug/kg	0.444	0.444	1	A
Heptachlor	ND		ug/kg	0.444	0.444	1	A
Aldrin	ND		ug/kg	0.444	0.444	1	A
Heptachlor epoxide	ND		ug/kg	0.888	0.888	1	B
Oxychlordane	ND		ug/kg	0.888	0.888	1	B
trans-Chlordane	ND		ug/kg	0.444	0.444	1	A
Endosulfan I	ND		ug/kg	0.444	0.444	1	A
cis-Chlordane	ND		ug/kg	0.444	0.444	1	A
trans-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDE	ND		ug/kg	0.444	0.444	1	A
Dieldrin	ND		ug/kg	0.444	0.444	1	A
Endrin	0.775	IP	ug/kg	0.444	0.444	1	A
Endosulfan II	ND		ug/kg	0.444	0.444	1	A
4,4'-DDD	ND		ug/kg	0.444	0.444	1	A
cis-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDT	ND		ug/kg	0.444	0.444	1	A
Methoxychlor	ND		ug/kg	4.44	4.44	1	A
Toxaphene	ND		ug/kg	22.3	22.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	48		30-150	A
BZ 198	57		30-150	A
DBOB	42		30-150	B
BZ 198	62		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-17
 Client ID: MN COMPOSITE 1 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 07:16
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.846	0.846	1	A
gamma-BHC	ND		ug/kg	0.423	0.423	1	A
Heptachlor	ND		ug/kg	0.423	0.423	1	A
Aldrin	ND		ug/kg	0.423	0.423	1	A
Heptachlor epoxide	ND		ug/kg	0.846	0.846	1	B
Oxychlordane	ND		ug/kg	0.846	0.846	1	B
trans-Chlordane	ND		ug/kg	0.423	0.423	1	A
Endosulfan I	ND		ug/kg	0.423	0.423	1	A
cis-Chlordane	ND		ug/kg	0.423	0.423	1	A
trans-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDE	ND		ug/kg	0.423	0.423	1	A
Dieldrin	ND		ug/kg	0.423	0.423	1	A
Endrin	0.677	IP	ug/kg	0.423	0.423	1	A
Endosulfan II	ND		ug/kg	0.423	0.423	1	A
4,4'-DDD	ND		ug/kg	0.423	0.423	1	A
cis-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDT	ND		ug/kg	0.423	0.423	1	A
Methoxychlor	ND		ug/kg	4.23	4.23	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	76		30-150	A
BZ 198	74		30-150	A
DBOB	65		30-150	B
BZ 198	78		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-18
 Client ID: MN COMPOSITE 1 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 07:50
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.874	0.874	1	A
gamma-BHC	ND		ug/kg	0.437	0.437	1	A
Heptachlor	ND		ug/kg	0.437	0.437	1	A
Aldrin	ND		ug/kg	0.437	0.437	1	A
Heptachlor epoxide	ND		ug/kg	0.874	0.874	1	B
Oxychlordane	ND		ug/kg	0.874	0.874	1	B
trans-Chlordane	ND		ug/kg	0.437	0.437	1	A
Endosulfan I	ND		ug/kg	0.437	0.437	1	A
cis-Chlordane	ND		ug/kg	0.437	0.437	1	A
trans-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDE	ND		ug/kg	0.437	0.437	1	A
Dieldrin	ND		ug/kg	0.437	0.437	1	A
Endrin	0.732	IP	ug/kg	0.437	0.437	1	A
Endosulfan II	ND		ug/kg	0.437	0.437	1	A
4,4'-DDD	ND		ug/kg	0.437	0.437	1	A
cis-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDT	ND		ug/kg	0.437	0.437	1	A
Methoxychlor	ND		ug/kg	4.37	4.37	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	84		30-150	A
BZ 198	82		30-150	A
DBOB	72		30-150	B
BZ 198	84		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-19
 Client ID: MN COMPOSITE 1 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 08:24
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.952	0.952	1	A
gamma-BHC	ND		ug/kg	0.476	0.476	1	A
Heptachlor	ND		ug/kg	0.476	0.476	1	A
Aldrin	ND		ug/kg	0.476	0.476	1	A
Heptachlor epoxide	ND		ug/kg	0.952	0.952	1	B
Oxychlordane	ND		ug/kg	0.952	0.952	1	B
trans-Chlordane	ND		ug/kg	0.476	0.476	1	A
Endosulfan I	ND		ug/kg	0.476	0.476	1	A
cis-Chlordane	ND		ug/kg	0.476	0.476	1	A
trans-Nonachlor	ND		ug/kg	0.476	0.476	1	A
4,4'-DDE	ND		ug/kg	0.476	0.476	1	A
Dieldrin	ND		ug/kg	0.476	0.476	1	A
Endrin	6.86	IP	ug/kg	0.476	0.476	1	A
Endosulfan II	ND		ug/kg	0.476	0.476	1	A
4,4'-DDD	ND		ug/kg	0.476	0.476	1	A
cis-Nonachlor	ND		ug/kg	0.476	0.476	1	A
4,4'-DDT	ND		ug/kg	0.476	0.476	1	A
Methoxychlor	ND		ug/kg	4.76	4.76	1	A
Toxaphene	ND		ug/kg	23.9	23.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	73		30-150	A
BZ 198	69		30-150	A
DBOB	71		30-150	B
BZ 198	74		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-20
 Client ID: MN COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 17:45
 Cleanup Method: EPA 3630
 Cleanup Date: 10/25/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 08:58
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.934	0.934	1	A
gamma-BHC	ND		ug/kg	0.467	0.467	1	A
Heptachlor	ND		ug/kg	0.467	0.467	1	A
Aldrin	ND		ug/kg	0.467	0.467	1	A
Heptachlor epoxide	ND		ug/kg	0.934	0.934	1	B
Oxychlordane	ND		ug/kg	0.934	0.934	1	B
trans-Chlordane	ND		ug/kg	0.467	0.467	1	A
Endosulfan I	ND		ug/kg	0.467	0.467	1	A
cis-Chlordane	ND		ug/kg	0.467	0.467	1	A
trans-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDE	ND		ug/kg	0.467	0.467	1	A
Dieldrin	ND		ug/kg	0.467	0.467	1	A
Endrin	0.771	IP	ug/kg	0.467	0.467	1	A
Endosulfan II	ND		ug/kg	0.467	0.467	1	A
4,4'-DDD	ND		ug/kg	0.467	0.467	1	A
cis-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDT	ND		ug/kg	0.467	0.467	1	A
Methoxychlor	ND		ug/kg	4.67	4.67	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	69		30-150	A
DBOB	71		30-150	B
BZ 198	74		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-21
 Client ID: MN COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 18:05
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.888	0.888	1	A
gamma-BHC	ND		ug/kg	0.444	0.444	1	A
Heptachlor	ND		ug/kg	0.444	0.444	1	A
Aldrin	ND	I	ug/kg	0.444	0.444	1	B
Heptachlor epoxide	ND		ug/kg	0.888	0.888	1	B
Oxychlordane	ND		ug/kg	0.888	0.888	1	B
trans-Chlordane	ND		ug/kg	0.444	0.444	1	A
Endosulfan I	ND		ug/kg	0.444	0.444	1	A
cis-Chlordane	ND		ug/kg	0.444	0.444	1	A
trans-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDE	2.11		ug/kg	0.444	0.444	1	A
Dieldrin	1.26	I	ug/kg	0.444	0.444	1	A
Endrin	1.71	IP	ug/kg	0.444	0.444	1	A
Endosulfan II	ND		ug/kg	0.444	0.444	1	A
4,4'-DDD	1.96		ug/kg	0.444	0.444	1	A
cis-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDT	1.33		ug/kg	0.444	0.444	1	A
Methoxychlor	ND		ug/kg	4.44	4.44	1	A
Toxaphene	ND		ug/kg	22.3	22.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		30-150	A
BZ 198	76		30-150	A
DBOB	65		30-150	B
BZ 198	74		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-22
 Client ID: MN COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 22:03
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.942	0.942	1	A
gamma-BHC	ND		ug/kg	0.471	0.471	1	A
Heptachlor	ND		ug/kg	0.471	0.471	1	A
Aldrin	ND		ug/kg	0.471	0.471	1	A
Heptachlor epoxide	ND		ug/kg	0.942	0.942	1	B
Oxychlordane	ND		ug/kg	0.942	0.942	1	B
trans-Chlordane	ND		ug/kg	0.471	0.471	1	A
Endosulfan I	ND		ug/kg	0.471	0.471	1	A
cis-Chlordane	ND		ug/kg	0.471	0.471	1	A
trans-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDE	0.560		ug/kg	0.471	0.471	1	B
Dieldrin	ND		ug/kg	0.471	0.471	1	A
Endrin	0.610	IP	ug/kg	0.471	0.471	1	A
Endosulfan II	ND		ug/kg	0.471	0.471	1	A
4,4'-DDD	ND		ug/kg	0.471	0.471	1	B
cis-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDT	ND		ug/kg	0.471	0.471	1	A
Methoxychlor	ND		ug/kg	4.71	4.71	1	A
Toxaphene	ND		ug/kg	23.6	23.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	54		30-150	A
DBOB	51		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-23
 Client ID: MN COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 22:37
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.871	0.871	1	A
gamma-BHC	ND		ug/kg	0.436	0.436	1	A
Heptachlor	ND		ug/kg	0.436	0.436	1	A
Aldrin	ND		ug/kg	0.436	0.436	1	A
Heptachlor epoxide	ND		ug/kg	0.871	0.871	1	B
Oxychlordane	ND		ug/kg	0.871	0.871	1	B
trans-Chlordane	ND		ug/kg	0.436	0.436	1	A
Endosulfan I	ND		ug/kg	0.436	0.436	1	A
cis-Chlordane	ND		ug/kg	0.436	0.436	1	A
trans-Nonachlor	ND		ug/kg	0.436	0.436	1	A
4,4'-DDE	ND		ug/kg	0.436	0.436	1	B
Dieldrin	ND		ug/kg	0.436	0.436	1	A
Endrin	0.438	IP	ug/kg	0.436	0.436	1	A
Endosulfan II	ND		ug/kg	0.436	0.436	1	A
4,4'-DDD	ND		ug/kg	0.436	0.436	1	A
cis-Nonachlor	ND		ug/kg	0.436	0.436	1	A
4,4'-DDT	ND		ug/kg	0.436	0.436	1	A
Methoxychlor	ND		ug/kg	4.36	4.36	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	47		30-150	A
BZ 198	45		30-150	A
DBOB	46		30-150	B
BZ 198	47		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-24
 Client ID: MN COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 23:11
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.973	0.973	1	A
gamma-BHC	ND		ug/kg	0.486	0.486	1	A
Heptachlor	ND		ug/kg	0.486	0.486	1	A
Aldrin	ND		ug/kg	0.486	0.486	1	A
Heptachlor epoxide	ND		ug/kg	0.973	0.973	1	B
Oxychlordane	ND		ug/kg	0.973	0.973	1	B
trans-Chlordane	ND		ug/kg	0.486	0.486	1	A
Endosulfan I	ND		ug/kg	0.486	0.486	1	A
cis-Chlordane	ND		ug/kg	0.486	0.486	1	A
trans-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDE	ND		ug/kg	0.486	0.486	1	A
Dieldrin	ND		ug/kg	0.486	0.486	1	B
Endrin	1.90	P	ug/kg	0.486	0.486	1	B
Endosulfan II	ND		ug/kg	0.486	0.486	1	A
4,4'-DDD	ND		ug/kg	0.486	0.486	1	A
cis-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDT	ND		ug/kg	0.486	0.486	1	A
Methoxychlor	ND		ug/kg	4.86	4.86	1	A
Toxaphene	ND		ug/kg	24.4	24.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	50		30-150	A
BZ 198	47		30-150	A
DBOB	47		30-150	B
BZ 198	50		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-25
 Client ID: MN COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/08/17 23:45
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.879	0.879	1	A
gamma-BHC	ND		ug/kg	0.439	0.439	1	A
Heptachlor	ND		ug/kg	0.439	0.439	1	A
Aldrin	ND		ug/kg	0.439	0.439	1	A
Heptachlor epoxide	ND		ug/kg	0.879	0.879	1	B
Oxychlordane	ND		ug/kg	0.879	0.879	1	B
trans-Chlordane	ND		ug/kg	0.439	0.439	1	A
Endosulfan I	ND		ug/kg	0.439	0.439	1	A
cis-Chlordane	ND		ug/kg	0.439	0.439	1	A
trans-Nonachlor	ND		ug/kg	0.439	0.439	1	A
4,4'-DDE	0.729		ug/kg	0.439	0.439	1	B
Dieldrin	ND		ug/kg	0.439	0.439	1	A
Endrin	0.688	IP	ug/kg	0.439	0.439	1	A
Endosulfan II	ND		ug/kg	0.439	0.439	1	A
4,4'-DDD	ND		ug/kg	0.439	0.439	1	A
cis-Nonachlor	ND		ug/kg	0.439	0.439	1	A
4,4'-DDT	ND		ug/kg	0.439	0.439	1	A
Methoxychlor	ND		ug/kg	4.39	4.39	1	A
Toxaphene	ND		ug/kg	22.0	22.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	71		30-150	A
BZ 198	70		30-150	A
DBOB	60		30-150	B
BZ 198	72		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-26
 Client ID: MN COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 00:19
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.942	0.942	1	A
gamma-BHC	ND		ug/kg	0.471	0.471	1	A
Heptachlor	ND		ug/kg	0.471	0.471	1	A
Aldrin	ND		ug/kg	0.471	0.471	1	A
Heptachlor epoxide	ND		ug/kg	0.942	0.942	1	B
Oxychlordane	ND		ug/kg	0.942	0.942	1	B
trans-Chlordane	ND		ug/kg	0.471	0.471	1	A
Endosulfan I	ND		ug/kg	0.471	0.471	1	A
cis-Chlordane	ND		ug/kg	0.471	0.471	1	A
trans-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDE	ND		ug/kg	0.471	0.471	1	A
Dieldrin	ND		ug/kg	0.471	0.471	1	A
Endrin	0.761	IP	ug/kg	0.471	0.471	1	A
Endosulfan II	ND		ug/kg	0.471	0.471	1	A
4,4'-DDD	ND		ug/kg	0.471	0.471	1	A
cis-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDT	ND		ug/kg	0.471	0.471	1	A
Methoxychlor	ND		ug/kg	4.71	4.71	1	A
Toxaphene	ND		ug/kg	23.6	23.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	67		30-150	A
DBOB	95		30-150	B
BZ 198	70		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-27
 Client ID: MN COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 00:53
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.909	0.909	1	A
gamma-BHC	ND		ug/kg	0.454	0.454	1	A
Heptachlor	ND		ug/kg	0.454	0.454	1	A
Aldrin	ND		ug/kg	0.454	0.454	1	A
Heptachlor epoxide	ND		ug/kg	0.909	0.909	1	B
Oxychlordane	ND		ug/kg	0.909	0.909	1	B
trans-Chlordane	ND		ug/kg	0.454	0.454	1	A
Endosulfan I	ND		ug/kg	0.454	0.454	1	A
cis-Chlordane	ND		ug/kg	0.454	0.454	1	A
trans-Nonachlor	ND		ug/kg	0.454	0.454	1	A
4,4'-DDE	ND		ug/kg	0.454	0.454	1	A
Dieldrin	ND		ug/kg	0.454	0.454	1	A
Endrin	ND		ug/kg	0.454	0.454	1	A
Endosulfan II	ND		ug/kg	0.454	0.454	1	A
4,4'-DDD	ND		ug/kg	0.454	0.454	1	A
cis-Nonachlor	ND		ug/kg	0.454	0.454	1	A
4,4'-DDT	ND		ug/kg	0.454	0.454	1	A
Methoxychlor	ND		ug/kg	4.54	4.54	1	A
Toxaphene	ND		ug/kg	22.8	22.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	63		30-150	A
DBOB	90		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-28
 Client ID: MN COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 01:27
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.847	0.847	1	A
gamma-BHC	ND		ug/kg	0.424	0.424	1	A
Heptachlor	ND		ug/kg	0.424	0.424	1	A
Aldrin	ND		ug/kg	0.424	0.424	1	A
Heptachlor epoxide	ND		ug/kg	0.847	0.847	1	B
Oxychlordane	ND		ug/kg	0.847	0.847	1	B
trans-Chlordane	ND		ug/kg	0.424	0.424	1	A
Endosulfan I	ND		ug/kg	0.424	0.424	1	A
cis-Chlordane	ND		ug/kg	0.424	0.424	1	A
trans-Nonachlor	ND		ug/kg	0.424	0.424	1	A
4,4'-DDE	0.512	P	ug/kg	0.424	0.424	1	A
Dieldrin	ND		ug/kg	0.424	0.424	1	A
Endrin	2.16	IP	ug/kg	0.424	0.424	1	A
Endosulfan II	ND		ug/kg	0.424	0.424	1	A
4,4'-DDD	ND		ug/kg	0.424	0.424	1	A
cis-Nonachlor	ND		ug/kg	0.424	0.424	1	A
4,4'-DDT	ND		ug/kg	0.424	0.424	1	A
Methoxychlor	ND		ug/kg	4.24	4.24	1	A
Toxaphene	ND		ug/kg	21.3	21.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	56		30-150	A
DBOB	49		30-150	B
BZ 198	58		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-29
 Client ID: MN COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 02:01
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.992	0.992	1	A
gamma-BHC	ND		ug/kg	0.496	0.496	1	A
Heptachlor	ND		ug/kg	0.496	0.496	1	A
Aldrin	ND		ug/kg	0.496	0.496	1	A
Heptachlor epoxide	ND		ug/kg	0.992	0.992	1	B
Oxychlordane	ND		ug/kg	0.992	0.992	1	B
trans-Chlordane	ND		ug/kg	0.496	0.496	1	A
Endosulfan I	ND		ug/kg	0.496	0.496	1	A
cis-Chlordane	ND		ug/kg	0.496	0.496	1	A
trans-Nonachlor	ND		ug/kg	0.496	0.496	1	A
4,4'-DDE	0.688		ug/kg	0.496	0.496	1	A
Dieldrin	ND		ug/kg	0.496	0.496	1	A
Endrin	1.78	IP	ug/kg	0.496	0.496	1	A
Endosulfan II	ND		ug/kg	0.496	0.496	1	A
4,4'-DDD	ND		ug/kg	0.496	0.496	1	A
cis-Nonachlor	ND		ug/kg	0.496	0.496	1	A
4,4'-DDT	ND		ug/kg	0.496	0.496	1	A
Methoxychlor	ND		ug/kg	4.96	4.96	1	A
Toxaphene	ND		ug/kg	24.9	24.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	60		30-150	A
DBOB	59		30-150	B
BZ 198	69		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-30
 Client ID: MN COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 02:35
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.938	0.938	1	A
gamma-BHC	ND		ug/kg	0.469	0.469	1	A
Heptachlor	ND		ug/kg	0.469	0.469	1	A
Aldrin	ND		ug/kg	0.469	0.469	1	A
Heptachlor epoxide	ND		ug/kg	0.938	0.938	1	B
Oxychlordane	ND		ug/kg	0.938	0.938	1	B
trans-Chlordane	ND		ug/kg	0.469	0.469	1	A
Endosulfan I	ND		ug/kg	0.469	0.469	1	A
cis-Chlordane	ND		ug/kg	0.469	0.469	1	A
trans-Nonachlor	ND		ug/kg	0.469	0.469	1	A
4,4'-DDE	ND		ug/kg	0.469	0.469	1	A
Dieldrin	ND		ug/kg	0.469	0.469	1	A
Endrin	21.5	P	ug/kg	0.469	0.469	1	A
Endosulfan II	ND		ug/kg	0.469	0.469	1	A
4,4'-DDD	ND		ug/kg	0.469	0.469	1	A
cis-Nonachlor	ND		ug/kg	0.469	0.469	1	A
4,4'-DDT	ND		ug/kg	0.469	0.469	1	A
Methoxychlor	ND		ug/kg	4.69	4.69	1	A
Toxaphene	ND		ug/kg	23.5	23.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	51		30-150	A
DBOB	73		30-150	B
BZ 198	60		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-31
 Client ID: MN COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 03:09
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.846	0.846	1	A
gamma-BHC	ND		ug/kg	0.423	0.423	1	A
Heptachlor	ND		ug/kg	0.423	0.423	1	A
Aldrin	ND		ug/kg	0.423	0.423	1	A
Heptachlor epoxide	ND		ug/kg	0.846	0.846	1	B
Oxychlordane	ND		ug/kg	0.846	0.846	1	B
trans-Chlordane	ND		ug/kg	0.423	0.423	1	A
Endosulfan I	ND		ug/kg	0.423	0.423	1	A
cis-Chlordane	ND		ug/kg	0.423	0.423	1	A
trans-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDE	0.494		ug/kg	0.423	0.423	1	A
Dieldrin	ND		ug/kg	0.423	0.423	1	A
Endrin	0.678	IP	ug/kg	0.423	0.423	1	A
Endosulfan II	ND		ug/kg	0.423	0.423	1	A
4,4'-DDD	ND		ug/kg	0.423	0.423	1	A
cis-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDT	ND		ug/kg	0.423	0.423	1	A
Methoxychlor	ND		ug/kg	4.23	4.23	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	61		30-150	A
BZ 198	54		30-150	A
DBOB	47		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-32
 Client ID: MN COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 03:43
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.874	0.874	1	A
gamma-BHC	ND		ug/kg	0.437	0.437	1	A
Heptachlor	ND		ug/kg	0.437	0.437	1	A
Aldrin	ND		ug/kg	0.437	0.437	1	A
Heptachlor epoxide	ND		ug/kg	0.874	0.874	1	B
Oxychlordane	ND		ug/kg	0.874	0.874	1	B
trans-Chlordane	ND		ug/kg	0.437	0.437	1	A
Endosulfan I	ND		ug/kg	0.437	0.437	1	A
cis-Chlordane	ND		ug/kg	0.437	0.437	1	A
trans-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDE	ND		ug/kg	0.437	0.437	1	A
Dieldrin	ND		ug/kg	0.437	0.437	1	A
Endrin	5.60		ug/kg	0.437	0.437	1	A
Endosulfan II	ND		ug/kg	0.437	0.437	1	A
4,4'-DDD	ND		ug/kg	0.437	0.437	1	A
cis-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDT	ND		ug/kg	0.437	0.437	1	A
Methoxychlor	ND		ug/kg	4.37	4.37	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	51		30-150	A
BZ 198	50		30-150	A
DBOB	50		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-33
 Client ID: MN COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 04:17
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.942	0.942	1	A
gamma-BHC	ND		ug/kg	0.471	0.471	1	A
Heptachlor	ND		ug/kg	0.471	0.471	1	A
Aldrin	ND		ug/kg	0.471	0.471	1	A
Heptachlor epoxide	ND		ug/kg	0.942	0.942	1	B
Oxychlordane	ND		ug/kg	0.942	0.942	1	B
trans-Chlordane	ND		ug/kg	0.471	0.471	1	A
Endosulfan I	ND		ug/kg	0.471	0.471	1	A
cis-Chlordane	ND		ug/kg	0.471	0.471	1	A
trans-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDE	0.565		ug/kg	0.471	0.471	1	A
Dieldrin	ND		ug/kg	0.471	0.471	1	A
Endrin	ND		ug/kg	0.471	0.471	1	A
Endosulfan II	ND		ug/kg	0.471	0.471	1	A
4,4'-DDD	ND		ug/kg	0.471	0.471	1	A
cis-Nonachlor	ND		ug/kg	0.471	0.471	1	A
4,4'-DDT	ND		ug/kg	0.471	0.471	1	A
Methoxychlor	ND		ug/kg	4.71	4.71	1	A
Toxaphene	ND		ug/kg	23.6	23.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	79		30-150	A
BZ 198	72		30-150	A
DBOB	56		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-34
 Client ID: MN COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 04:51
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.846	0.846	1	A
gamma-BHC	ND		ug/kg	0.423	0.423	1	A
Heptachlor	ND		ug/kg	0.423	0.423	1	A
Aldrin	ND		ug/kg	0.423	0.423	1	A
Heptachlor epoxide	ND		ug/kg	0.846	0.846	1	B
Oxychlordane	ND		ug/kg	0.846	0.846	1	B
trans-Chlordane	ND		ug/kg	0.423	0.423	1	A
Endosulfan I	ND		ug/kg	0.423	0.423	1	A
cis-Chlordane	ND		ug/kg	0.423	0.423	1	A
trans-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDE	0.700		ug/kg	0.423	0.423	1	A
Dieldrin	ND		ug/kg	0.423	0.423	1	A
Endrin	6.34	P	ug/kg	0.423	0.423	1	A
Endosulfan II	ND		ug/kg	0.423	0.423	1	A
4,4'-DDD	ND		ug/kg	0.423	0.423	1	A
cis-Nonachlor	ND		ug/kg	0.423	0.423	1	A
4,4'-DDT	ND		ug/kg	0.423	0.423	1	A
Methoxychlor	ND		ug/kg	4.23	4.23	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	60		30-150	A
DBOB	62		30-150	B
BZ 198	66		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-35
Client ID: MN COMPOSITE 4 REP E
Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:00
Date Received: 09/29/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 10/23/17 19:00
Cleanup Method: EPA 3630
Cleanup Date: 10/26/17

Matrix: Tissue
Analytical Method: 1,8081B
Analytical Date: 11/09/17 05:25
Analyst: DP
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.986	0.986	1	A
gamma-BHC	ND		ug/kg	0.493	0.493	1	A
Heptachlor	ND		ug/kg	0.493	0.493	1	A
Aldrin	ND		ug/kg	0.493	0.493	1	A
Heptachlor epoxide	ND		ug/kg	0.986	0.986	1	B
Oxychlordane	ND		ug/kg	0.986	0.986	1	B
trans-Chlordane	ND		ug/kg	0.493	0.493	1	A
Endosulfan I	ND		ug/kg	0.493	0.493	1	A
cis-Chlordane	ND		ug/kg	0.493	0.493	1	A
trans-Nonachlor	ND		ug/kg	0.493	0.493	1	A
4,4'-DDE	ND		ug/kg	0.493	0.493	1	A
Dieldrin	ND		ug/kg	0.493	0.493	1	A
Endrin	0.993	IP	ug/kg	0.493	0.493	1	A
Endosulfan II	ND		ug/kg	0.493	0.493	1	A
4,4'-DDD	ND		ug/kg	0.493	0.493	1	A
cis-Nonachlor	ND		ug/kg	0.493	0.493	1	A
4,4'-DDT	ND		ug/kg	0.493	0.493	1	A
Methoxychlor	ND		ug/kg	4.93	4.93	1	A
Toxaphene	ND		ug/kg	24.8	24.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	64		30-150	A
BZ 198	62		30-150	A
DBOB	54		30-150	B
BZ 198	60		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-36
 Client ID: MN COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 05:59
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.852	0.852	1	A
gamma-BHC	ND		ug/kg	0.426	0.426	1	A
Heptachlor	ND		ug/kg	0.426	0.426	1	A
Aldrin	ND		ug/kg	0.426	0.426	1	A
Heptachlor epoxide	ND		ug/kg	0.852	0.852	1	B
Oxychlordane	ND		ug/kg	0.852	0.852	1	B
trans-Chlordane	ND		ug/kg	0.426	0.426	1	A
Endosulfan I	ND		ug/kg	0.426	0.426	1	A
cis-Chlordane	ND		ug/kg	0.426	0.426	1	A
trans-Nonachlor	ND		ug/kg	0.426	0.426	1	A
4,4'-DDE	0.620		ug/kg	0.426	0.426	1	B
Dieldrin	ND		ug/kg	0.426	0.426	1	A
Endrin	0.536	IP	ug/kg	0.426	0.426	1	A
Endosulfan II	ND		ug/kg	0.426	0.426	1	A
4,4'-DDD	ND		ug/kg	0.426	0.426	1	A
cis-Nonachlor	ND		ug/kg	0.426	0.426	1	A
4,4'-DDT	ND		ug/kg	0.426	0.426	1	A
Methoxychlor	ND		ug/kg	4.26	4.26	1	A
Toxaphene	ND		ug/kg	21.4	21.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	69		30-150	A
DBOB	70		30-150	B
BZ 198	71		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-37
 Client ID: MN COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 06:33
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.843	0.843	1	A
gamma-BHC	ND		ug/kg	0.422	0.422	1	A
Heptachlor	ND		ug/kg	0.422	0.422	1	A
Aldrin	ND		ug/kg	0.422	0.422	1	A
Heptachlor epoxide	ND		ug/kg	0.843	0.843	1	B
Oxychlordane	ND		ug/kg	0.843	0.843	1	B
trans-Chlordane	ND		ug/kg	0.422	0.422	1	A
Endosulfan I	ND		ug/kg	0.422	0.422	1	A
cis-Chlordane	ND		ug/kg	0.422	0.422	1	A
trans-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDE	0.659		ug/kg	0.422	0.422	1	A
Dieldrin	ND		ug/kg	0.422	0.422	1	A
Endrin	0.957	IP	ug/kg	0.422	0.422	1	A
Endosulfan II	ND		ug/kg	0.422	0.422	1	A
4,4'-DDD	ND		ug/kg	0.422	0.422	1	A
cis-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDT	ND		ug/kg	0.422	0.422	1	A
Methoxychlor	ND		ug/kg	4.22	4.22	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	55		30-150	A
DBOB	49		30-150	B
BZ 198	56		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-38
 Client ID: MN COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 07:07
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.836	0.836	1	A
gamma-BHC	ND		ug/kg	0.418	0.418	1	A
Heptachlor	ND		ug/kg	0.418	0.418	1	A
Aldrin	ND		ug/kg	0.418	0.418	1	A
Heptachlor epoxide	ND		ug/kg	0.836	0.836	1	B
Oxychlordane	ND		ug/kg	0.836	0.836	1	B
trans-Chlordane	ND		ug/kg	0.418	0.418	1	A
Endosulfan I	ND		ug/kg	0.418	0.418	1	A
cis-Chlordane	ND		ug/kg	0.418	0.418	1	A
trans-Nonachlor	ND		ug/kg	0.418	0.418	1	A
4,4'-DDE	0.718	I	ug/kg	0.418	0.418	1	A
Dieldrin	ND		ug/kg	0.418	0.418	1	A
Endrin	0.818	IP	ug/kg	0.418	0.418	1	A
Endosulfan II	ND		ug/kg	0.418	0.418	1	A
4,4'-DDD	ND		ug/kg	0.418	0.418	1	A
cis-Nonachlor	ND		ug/kg	0.418	0.418	1	A
4,4'-DDT	ND		ug/kg	0.418	0.418	1	A
Methoxychlor	ND		ug/kg	4.18	4.18	1	A
Toxaphene	ND		ug/kg	21.0	21.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	61		30-150	A
DBOB	60		30-150	B
BZ 198	63		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-39
 Client ID: MN COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 07:41
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.883	0.883	1	A
gamma-BHC	ND		ug/kg	0.442	0.442	1	A
Heptachlor	ND		ug/kg	0.442	0.442	1	A
Aldrin	ND		ug/kg	0.442	0.442	1	A
Heptachlor epoxide	ND		ug/kg	0.883	0.883	1	B
Oxychlordane	ND		ug/kg	0.883	0.883	1	B
trans-Chlordane	ND		ug/kg	0.442	0.442	1	A
Endosulfan I	ND		ug/kg	0.442	0.442	1	A
cis-Chlordane	ND		ug/kg	0.442	0.442	1	A
trans-Nonachlor	ND		ug/kg	0.442	0.442	1	A
4,4'-DDE	1.18		ug/kg	0.442	0.442	1	B
Dieldrin	ND		ug/kg	0.442	0.442	1	A
Endrin	0.670	IP	ug/kg	0.442	0.442	1	A
Endosulfan II	ND		ug/kg	0.442	0.442	1	A
4,4'-DDD	ND		ug/kg	0.442	0.442	1	A
cis-Nonachlor	ND		ug/kg	0.442	0.442	1	A
4,4'-DDT	ND		ug/kg	0.442	0.442	1	A
Methoxychlor	ND		ug/kg	4.42	4.42	1	A
Toxaphene	ND		ug/kg	22.2	22.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		30-150	A
BZ 198	66		30-150	A
DBOB	66		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-40
 Client ID: MN COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 09:30
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 19:00
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 08:15
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.836	0.836	1	A
gamma-BHC	ND		ug/kg	0.418	0.418	1	A
Heptachlor	ND		ug/kg	0.418	0.418	1	A
Aldrin	ND		ug/kg	0.418	0.418	1	A
Heptachlor epoxide	ND		ug/kg	0.836	0.836	1	B
Oxychlordane	ND		ug/kg	0.836	0.836	1	B
trans-Chlordane	ND		ug/kg	0.418	0.418	1	A
Endosulfan I	ND		ug/kg	0.418	0.418	1	A
cis-Chlordane	ND		ug/kg	0.418	0.418	1	A
trans-Nonachlor	ND		ug/kg	0.418	0.418	1	A
4,4'-DDE	0.732		ug/kg	0.418	0.418	1	A
Dieldrin	ND		ug/kg	0.418	0.418	1	A
Endrin	0.561	IP	ug/kg	0.418	0.418	1	A
Endosulfan II	ND		ug/kg	0.418	0.418	1	A
4,4'-DDD	ND		ug/kg	0.418	0.418	1	A
cis-Nonachlor	ND		ug/kg	0.418	0.418	1	A
4,4'-DDT	ND		ug/kg	0.418	0.418	1	A
Methoxychlor	ND		ug/kg	4.18	4.18	1	A
Toxaphene	ND		ug/kg	21.0	21.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	66		30-150	A
BZ 198	61		30-150	A
DBOB	60		30-150	B
BZ 198	62		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-41
 Client ID: MN COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 18:47
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.914	0.914	1	A
gamma-BHC	ND		ug/kg	0.457	0.457	1	A
Heptachlor	ND		ug/kg	0.457	0.457	1	A
Aldrin	ND		ug/kg	0.457	0.457	1	A
Heptachlor epoxide	ND		ug/kg	0.914	0.914	1	B
Oxychlordane	ND		ug/kg	0.914	0.914	1	B
trans-Chlordane	ND		ug/kg	0.457	0.457	1	A
Endosulfan I	ND		ug/kg	0.457	0.457	1	A
cis-Chlordane	0.492		ug/kg	0.457	0.457	1	B
trans-Nonachlor	ND		ug/kg	0.457	0.457	1	B
4,4'-DDE	1.50		ug/kg	0.457	0.457	1	A
Dieldrin	0.743	IP	ug/kg	0.457	0.457	1	A
Endrin	0.847	IP	ug/kg	0.457	0.457	1	A
Endosulfan II	1.58	P	ug/kg	0.457	0.457	1	A
4,4'-DDD	0.553		ug/kg	0.457	0.457	1	B
cis-Nonachlor	ND		ug/kg	0.457	0.457	1	A
4,4'-DDT	0.848	IP	ug/kg	0.457	0.457	1	A
Methoxychlor	ND		ug/kg	4.57	4.57	1	A
Toxaphene	ND		ug/kg	22.9	22.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	80		30-150	A
BZ 198	76		30-150	A
DBOB	79		30-150	B
BZ 198	79		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-42
 Client ID: MN COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 19:22
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.906	0.906	1	A
gamma-BHC	ND		ug/kg	0.453	0.453	1	A
Heptachlor	ND		ug/kg	0.453	0.453	1	A
Aldrin	ND		ug/kg	0.453	0.453	1	A
Heptachlor epoxide	ND		ug/kg	0.906	0.906	1	B
Oxychlordane	ND		ug/kg	0.906	0.906	1	B
trans-Chlordane	ND		ug/kg	0.453	0.453	1	A
Endosulfan I	ND		ug/kg	0.453	0.453	1	A
cis-Chlordane	0.458		ug/kg	0.453	0.453	1	B
trans-Nonachlor	ND		ug/kg	0.453	0.453	1	A
4,4'-DDE	1.30		ug/kg	0.453	0.453	1	A
Dieldrin	0.666	IP	ug/kg	0.453	0.453	1	A
Endrin	0.907	IP	ug/kg	0.453	0.453	1	A
Endosulfan II	ND		ug/kg	0.453	0.453	1	A
4,4'-DDD	ND		ug/kg	0.453	0.453	1	A
cis-Nonachlor	ND		ug/kg	0.453	0.453	1	A
4,4'-DDT	0.478	IP	ug/kg	0.453	0.453	1	A
Methoxychlor	ND		ug/kg	4.53	4.53	1	A
Toxaphene	ND		ug/kg	22.7	22.7	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	69		30-150	A
DBOB	60		30-150	B
BZ 198	70		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-43
 Client ID: MN COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 19:56
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.868	0.868	1	A
gamma-BHC	ND		ug/kg	0.434	0.434	1	A
Heptachlor	ND		ug/kg	0.434	0.434	1	A
Aldrin	ND		ug/kg	0.434	0.434	1	A
Heptachlor epoxide	ND		ug/kg	0.868	0.868	1	B
Oxychlordane	ND		ug/kg	0.868	0.868	1	B
trans-Chlordane	ND		ug/kg	0.434	0.434	1	A
Endosulfan I	ND		ug/kg	0.434	0.434	1	A
cis-Chlordane	0.835	P	ug/kg	0.434	0.434	1	A
trans-Nonachlor	ND		ug/kg	0.434	0.434	1	A
4,4'-DDE	1.69		ug/kg	0.434	0.434	1	A
Dieldrin	0.853	IP	ug/kg	0.434	0.434	1	A
Endrin	1.71	IP	ug/kg	0.434	0.434	1	A
Endosulfan II	ND		ug/kg	0.434	0.434	1	A
4,4'-DDD	0.492		ug/kg	0.434	0.434	1	A
cis-Nonachlor	ND		ug/kg	0.434	0.434	1	A
4,4'-DDT	0.547	IP	ug/kg	0.434	0.434	1	A
Methoxychlor	ND		ug/kg	4.34	4.34	1	A
Toxaphene	ND		ug/kg	21.8	21.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	63		30-150	A
DBOB	64		30-150	B
BZ 198	68		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-44
 Client ID: MN COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 20:30
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.936	0.936	1	A
gamma-BHC	ND		ug/kg	0.468	0.468	1	A
Heptachlor	ND		ug/kg	0.468	0.468	1	A
Aldrin	ND		ug/kg	0.468	0.468	1	A
Heptachlor epoxide	ND		ug/kg	0.936	0.936	1	B
Oxychlordane	ND		ug/kg	0.936	0.936	1	B
trans-Chlordane	ND		ug/kg	0.468	0.468	1	A
Endosulfan I	ND		ug/kg	0.468	0.468	1	A
cis-Chlordane	ND		ug/kg	0.468	0.468	1	A
trans-Nonachlor	ND		ug/kg	0.468	0.468	1	A
4,4'-DDE	1.79		ug/kg	0.468	0.468	1	A
Dieldrin	0.772	IP	ug/kg	0.468	0.468	1	A
Endrin	0.781	IP	ug/kg	0.468	0.468	1	A
Endosulfan II	ND		ug/kg	0.468	0.468	1	A
4,4'-DDD	ND		ug/kg	0.468	0.468	1	A
cis-Nonachlor	ND		ug/kg	0.468	0.468	1	A
4,4'-DDT	1.52	P	ug/kg	0.468	0.468	1	B
Methoxychlor	ND		ug/kg	4.68	4.68	1	A
Toxaphene	ND		ug/kg	23.5	23.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	75		30-150	A
DBOB	65		30-150	B
BZ 198	79		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-45
 Client ID: MN COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 21:04
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.921	0.921	1	A
gamma-BHC	ND		ug/kg	0.460	0.460	1	A
Heptachlor	ND		ug/kg	0.460	0.460	1	A
Aldrin	ND		ug/kg	0.460	0.460	1	A
Heptachlor epoxide	ND		ug/kg	0.921	0.921	1	B
Oxychlordane	ND		ug/kg	0.921	0.921	1	B
trans-Chlordane	ND		ug/kg	0.460	0.460	1	A
Endosulfan I	ND		ug/kg	0.460	0.460	1	A
cis-Chlordane	0.792	P	ug/kg	0.460	0.460	1	A
trans-Nonachlor	0.865	P	ug/kg	0.460	0.460	1	B
4,4'-DDE	1.45		ug/kg	0.460	0.460	1	A
Dieldrin	0.536	IP	ug/kg	0.460	0.460	1	A
Endrin	0.544	IP	ug/kg	0.460	0.460	1	A
Endosulfan II	1.28	P	ug/kg	0.460	0.460	1	A
4,4'-DDD	ND		ug/kg	0.460	0.460	1	B
cis-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDT	0.987		ug/kg	0.460	0.460	1	A
Methoxychlor	ND		ug/kg	4.60	4.60	1	A
Toxaphene	ND		ug/kg	23.1	23.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	71		30-150	A
DBOB	64		30-150	B
BZ 198	69		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-46
 Client ID: MN COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 21:38
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.840	0.840	1	A
gamma-BHC	ND		ug/kg	0.420	0.420	1	A
Heptachlor	ND		ug/kg	0.420	0.420	1	A
Aldrin	ND		ug/kg	0.420	0.420	1	A
Heptachlor epoxide	ND		ug/kg	0.840	0.840	1	B
Oxychlordane	ND		ug/kg	0.840	0.840	1	B
trans-Chlordane	ND		ug/kg	0.420	0.420	1	A
Endosulfan I	ND		ug/kg	0.420	0.420	1	A
cis-Chlordane	0.586		ug/kg	0.420	0.420	1	B
trans-Nonachlor	0.625	P	ug/kg	0.420	0.420	1	A
4,4'-DDE	1.57		ug/kg	0.420	0.420	1	A
Dieldrin	0.865	IP	ug/kg	0.420	0.420	1	A
Endrin	0.529	IP	ug/kg	0.420	0.420	1	A
Endosulfan II	1.48	P	ug/kg	0.420	0.420	1	A
4,4'-DDD	0.484		ug/kg	0.420	0.420	1	A
cis-Nonachlor	ND		ug/kg	0.420	0.420	1	A
4,4'-DDT	0.950	I	ug/kg	0.420	0.420	1	A
Methoxychlor	ND		ug/kg	4.20	4.20	1	A
Toxaphene	ND		ug/kg	21.1	21.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	65		30-150	A
DBOB	63		30-150	B
BZ 198	72		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-47
 Client ID: MN COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 22:12
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.864	0.864	1	A
gamma-BHC	ND		ug/kg	0.432	0.432	1	A
Heptachlor	ND		ug/kg	0.432	0.432	1	A
Aldrin	ND		ug/kg	0.432	0.432	1	A
Heptachlor epoxide	ND		ug/kg	0.864	0.864	1	B
Oxychlordane	ND		ug/kg	0.864	0.864	1	B
trans-Chlordane	ND		ug/kg	0.432	0.432	1	A
Endosulfan I	ND		ug/kg	0.432	0.432	1	A
cis-Chlordane	ND		ug/kg	0.432	0.432	1	A
trans-Nonachlor	ND		ug/kg	0.432	0.432	1	A
4,4'-DDE	1.18		ug/kg	0.432	0.432	1	A
Dieldrin	0.568	IP	ug/kg	0.432	0.432	1	A
Endrin	0.522	IP	ug/kg	0.432	0.432	1	A
Endosulfan II	ND		ug/kg	0.432	0.432	1	A
4,4'-DDD	ND		ug/kg	0.432	0.432	1	A
cis-Nonachlor	ND		ug/kg	0.432	0.432	1	A
4,4'-DDT	0.820	I	ug/kg	0.432	0.432	1	A
Methoxychlor	ND		ug/kg	4.32	4.32	1	A
Toxaphene	ND		ug/kg	21.7	21.7	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	71		30-150	A
DBOB	63		30-150	B
BZ 198	70		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-48
 Client ID: MN COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 22:46
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.877	0.877	1	A
gamma-BHC	ND		ug/kg	0.438	0.438	1	A
Heptachlor	ND		ug/kg	0.438	0.438	1	A
Aldrin	ND		ug/kg	0.438	0.438	1	A
Heptachlor epoxide	ND		ug/kg	0.877	0.877	1	B
Oxychlordane	ND		ug/kg	0.877	0.877	1	B
trans-Chlordane	ND		ug/kg	0.438	0.438	1	A
Endosulfan I	ND		ug/kg	0.438	0.438	1	A
cis-Chlordane	1.16	P	ug/kg	0.438	0.438	1	A
trans-Nonachlor	ND		ug/kg	0.438	0.438	1	A
4,4'-DDE	1.19		ug/kg	0.438	0.438	1	A
Dieldrin	ND		ug/kg	0.438	0.438	1	A
Endrin	1.12	IP	ug/kg	0.438	0.438	1	A
Endosulfan II	1.84		ug/kg	0.438	0.438	1	A
4,4'-DDD	ND		ug/kg	0.438	0.438	1	A
cis-Nonachlor	ND		ug/kg	0.438	0.438	1	A
4,4'-DDT	0.597	I	ug/kg	0.438	0.438	1	A
Methoxychlor	ND		ug/kg	4.38	4.38	1	A
Toxaphene	ND		ug/kg	22.0	22.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	66		30-150	A
BZ 198	69		30-150	A
DBOB	61		30-150	B
BZ 198	72		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-49
 Client ID: MN COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 23:20
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.947	0.947	1	A
gamma-BHC	ND		ug/kg	0.473	0.473	1	A
Heptachlor	ND		ug/kg	0.473	0.473	1	A
Aldrin	ND		ug/kg	0.473	0.473	1	A
Heptachlor epoxide	ND		ug/kg	0.947	0.947	1	B
Oxychlordane	ND		ug/kg	0.947	0.947	1	B
trans-Chlordane	ND		ug/kg	0.473	0.473	1	A
Endosulfan I	ND		ug/kg	0.473	0.473	1	A
cis-Chlordane	ND		ug/kg	0.473	0.473	1	A
trans-Nonachlor	1.58		ug/kg	0.473	0.473	1	B
4,4'-DDE	1.36		ug/kg	0.473	0.473	1	A
Dieldrin	0.722	IP	ug/kg	0.473	0.473	1	A
Endrin	12.1		ug/kg	0.473	0.473	1	A
Endosulfan II	2.18	P	ug/kg	0.473	0.473	1	A
4,4'-DDD	ND		ug/kg	0.473	0.473	1	A
cis-Nonachlor	ND		ug/kg	0.473	0.473	1	A
4,4'-DDT	1.34		ug/kg	0.473	0.473	1	A
Methoxychlor	ND		ug/kg	4.73	4.73	1	A
Toxaphene	ND		ug/kg	23.8	23.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	74		30-150	A
BZ 198	77		30-150	A
DBOB	113		30-150	B
BZ 198	87		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-50
 Client ID: MN COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/09/17 23:54
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.934	0.934	1	A
gamma-BHC	ND		ug/kg	0.467	0.467	1	A
Heptachlor	ND		ug/kg	0.467	0.467	1	A
Aldrin	ND		ug/kg	0.467	0.467	1	A
Heptachlor epoxide	ND		ug/kg	0.934	0.934	1	B
Oxychlordane	ND		ug/kg	0.934	0.934	1	B
trans-Chlordane	ND		ug/kg	0.467	0.467	1	A
Endosulfan I	ND		ug/kg	0.467	0.467	1	A
cis-Chlordane	ND		ug/kg	0.467	0.467	1	B
trans-Nonachlor	0.674	P	ug/kg	0.467	0.467	1	A
4,4'-DDE	1.17		ug/kg	0.467	0.467	1	A
Dieldrin	0.552	IP	ug/kg	0.467	0.467	1	A
Endrin	3.74	IP	ug/kg	0.467	0.467	1	A
Endosulfan II	ND		ug/kg	0.467	0.467	1	A
4,4'-DDD	ND		ug/kg	0.467	0.467	1	A
cis-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDT	0.848	IP	ug/kg	0.467	0.467	1	A
Methoxychlor	ND		ug/kg	4.67	4.67	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	72		30-150	A
BZ 198	82		30-150	A
DBOB	66		30-150	B
BZ 198	80		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-51
 Client ID: MN COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 00:28
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.888	0.888	1	A
gamma-BHC	ND		ug/kg	0.444	0.444	1	A
Heptachlor	ND		ug/kg	0.444	0.444	1	A
Aldrin	ND		ug/kg	0.444	0.444	1	A
Heptachlor epoxide	ND		ug/kg	0.888	0.888	1	B
Oxychlordane	ND		ug/kg	0.888	0.888	1	B
trans-Chlordane	ND		ug/kg	0.444	0.444	1	A
Endosulfan I	ND		ug/kg	0.444	0.444	1	A
cis-Chlordane	0.500	P	ug/kg	0.444	0.444	1	B
trans-Nonachlor	1.31	IP	ug/kg	0.444	0.444	1	A
4,4'-DDE	1.22		ug/kg	0.444	0.444	1	A
Dieldrin	0.446	I	ug/kg	0.444	0.444	1	A
Endrin	7.81	I	ug/kg	0.444	0.444	1	A
Endosulfan II	ND		ug/kg	0.444	0.444	1	A
4,4'-DDD	ND		ug/kg	0.444	0.444	1	A
cis-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDT	1.09	P	ug/kg	0.444	0.444	1	A
Methoxychlor	ND		ug/kg	4.44	4.44	1	A
Toxaphene	ND		ug/kg	22.3	22.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	79		30-150	A
BZ 198	75		30-150	A
DBOB	105		30-150	B
BZ 198	80		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-52
 Client ID: MN COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 01:02
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.901	0.901	1	A
gamma-BHC	ND		ug/kg	0.450	0.450	1	A
Heptachlor	ND		ug/kg	0.450	0.450	1	A
Aldrin	ND		ug/kg	0.450	0.450	1	A
Heptachlor epoxide	ND		ug/kg	0.901	0.901	1	B
Oxychlordane	ND		ug/kg	0.901	0.901	1	B
trans-Chlordane	ND		ug/kg	0.450	0.450	1	A
Endosulfan I	ND		ug/kg	0.450	0.450	1	A
cis-Chlordane	ND		ug/kg	0.450	0.450	1	A
trans-Nonachlor	1.62		ug/kg	0.450	0.450	1	A
4,4'-DDE	1.41		ug/kg	0.450	0.450	1	A
Dieldrin	0.487	IP	ug/kg	0.450	0.450	1	A
Endrin	2.52	IP	ug/kg	0.450	0.450	1	A
Endosulfan II	1.40	P	ug/kg	0.450	0.450	1	A
4,4'-DDD	3.27	P	ug/kg	0.450	0.450	1	B
cis-Nonachlor	ND		ug/kg	0.450	0.450	1	A
4,4'-DDT	ND		ug/kg	0.450	0.450	1	A
Methoxychlor	ND		ug/kg	4.50	4.50	1	A
Toxaphene	ND		ug/kg	22.6	22.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	92		30-150	A
BZ 198	77		30-150	A
DBOB	96		30-150	B
BZ 198	88		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-53
 Client ID: MN COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 01:36
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.938	0.938	1	A
gamma-BHC	ND		ug/kg	0.469	0.469	1	A
Heptachlor	ND		ug/kg	0.469	0.469	1	A
Aldrin	ND		ug/kg	0.469	0.469	1	A
Heptachlor epoxide	ND		ug/kg	0.938	0.938	1	B
Oxychlordane	ND		ug/kg	0.938	0.938	1	B
trans-Chlordane	ND		ug/kg	0.469	0.469	1	A
Endosulfan I	ND		ug/kg	0.469	0.469	1	A
cis-Chlordane	0.542		ug/kg	0.469	0.469	1	B
trans-Nonachlor	1.60		ug/kg	0.469	0.469	1	A
4,4'-DDE	0.916		ug/kg	0.469	0.469	1	A
Dieldrin	0.498	IP	ug/kg	0.469	0.469	1	A
Endrin	1.26	IP	ug/kg	0.469	0.469	1	A
Endosulfan II	ND		ug/kg	0.469	0.469	1	A
4,4'-DDD	ND		ug/kg	0.469	0.469	1	A
cis-Nonachlor	ND		ug/kg	0.469	0.469	1	A
4,4'-DDT	1.32	P	ug/kg	0.469	0.469	1	A
Methoxychlor	ND		ug/kg	4.69	4.69	1	A
Toxaphene	ND		ug/kg	23.5	23.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	76		30-150	A
BZ 198	76		30-150	A
DBOB	104		30-150	B
BZ 198	74		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-54
 Client ID: MN COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 02:10
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.843	0.843	1	A
gamma-BHC	ND		ug/kg	0.422	0.422	1	A
Heptachlor	ND		ug/kg	0.422	0.422	1	A
Aldrin	ND		ug/kg	0.422	0.422	1	A
Heptachlor epoxide	ND		ug/kg	0.843	0.843	1	B
Oxychlordane	ND		ug/kg	0.843	0.843	1	B
trans-Chlordane	ND		ug/kg	0.422	0.422	1	A
Endosulfan I	ND		ug/kg	0.422	0.422	1	A
cis-Chlordane	ND		ug/kg	0.422	0.422	1	A
trans-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDE	0.852		ug/kg	0.422	0.422	1	A
Dieldrin	0.435	IP	ug/kg	0.422	0.422	1	A
Endrin	4.62	IP	ug/kg	0.422	0.422	1	A
Endosulfan II	ND		ug/kg	0.422	0.422	1	A
4,4'-DDD	1.38	P	ug/kg	0.422	0.422	1	B
cis-Nonachlor	ND		ug/kg	0.422	0.422	1	A
4,4'-DDT	0.746		ug/kg	0.422	0.422	1	A
Methoxychlor	ND		ug/kg	4.22	4.22	1	A
Toxaphene	ND		ug/kg	21.2	21.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		30-150	A
BZ 198	67		30-150	A
DBOB	56		30-150	B
BZ 198	78		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-55
 Client ID: MN COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 11:00
 Date Received: 09/29/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/23/17 21:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/26/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 02:44
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.917	0.917	1	A
gamma-BHC	ND		ug/kg	0.459	0.459	1	A
Heptachlor	ND		ug/kg	0.459	0.459	1	A
Aldrin	ND		ug/kg	0.459	0.459	1	A
Heptachlor epoxide	ND		ug/kg	0.917	0.917	1	B
Oxychlordane	ND		ug/kg	0.917	0.917	1	B
trans-Chlordane	ND		ug/kg	0.459	0.459	1	A
Endosulfan I	ND		ug/kg	0.459	0.459	1	A
cis-Chlordane	ND		ug/kg	0.459	0.459	1	A
trans-Nonachlor	ND		ug/kg	0.459	0.459	1	A
4,4'-DDE	0.767	I	ug/kg	0.459	0.459	1	A
Dieldrin	0.651	IP	ug/kg	0.459	0.459	1	A
Endrin	12.4	P	ug/kg	0.459	0.459	1	A
Endosulfan II	ND		ug/kg	0.459	0.459	1	A
4,4'-DDD	ND		ug/kg	0.459	0.459	1	A
cis-Nonachlor	ND		ug/kg	0.459	0.459	1	A
4,4'-DDT	0.908	P	ug/kg	0.459	0.459	1	A
Methoxychlor	ND		ug/kg	4.59	4.59	1	A
Toxaphene	ND		ug/kg	23.0	23.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	75		30-150	A
BZ 198	74		30-150	A
DBOB	59		30-150	B
BZ 198	77		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/07/17 16:31
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/23/17 17:45
Cleanup Method: EPA 3630
Cleanup Date: 10/25/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-20 Batch: WG1055361-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
cis-Chlordane	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDE	ND		ug/kg	0.500	0.500	A
Dieldrin	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	79		30-150	A
DBOB	67		30-150	B
BZ 198	75		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/08/17 15:49
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/23/17 19:00
Cleanup Method: EPA 3630
Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 21-40 Batch: WG1055392-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B
cis-Chlordane	ND		ug/kg	0.500	0.500	B
4,4'-DDE	ND		ug/kg	0.500	0.500	B
Dieldrin	ND		ug/kg	0.500	0.500	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	59		30-150	A
BZ 198	65		30-150	A
DBOB	60		30-150	B
BZ 198	66		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/09/17 14:49
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/23/17 21:30
Cleanup Method: EPA 3630
Cleanup Date: 10/26/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 41-55 Batch: WG1055417-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
cis-Chlordane	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDE	ND		ug/kg	0.500	0.500	A
Dieldrin	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	55		30-150	A
BZ 198	72		30-150	A
DBOB	54		30-150	B
BZ 198	70		30-150	B



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 Batch: WG1055361-2 WG1055361-3									
Hexachlorobenzene	52		63		50-120	19		30	A
gamma-BHC	53		67		50-120	23		30	A
Heptachlor	56		67		50-120	18		30	A
Aldrin	57		68		50-120	18		30	A
trans-Chlordane	63		76		50-120	19		30	A
Endosulfan I	62		74		50-120	18		30	A
cis-Chlordane	60		72		50-120	18		30	A
trans-Nonachlor	60		72		50-120	18		30	A
4,4'-DDE	67		81		50-120	19		30	A
Dieldrin	66		80		50-120	19		30	A
Endrin	59		72		50-120	20		30	A
4,4'-DDD	63		75		50-120	17		30	A
cis-Nonachlor	66		78		50-120	17		30	A
4,4'-DDT	63		75		50-120	17		30	A
Methoxychlor	54		64		50-120	17		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	60		70		30-150	A
BZ 198	66		80		30-150	A
DBOB	59		68		30-150	B
BZ 198	65		74		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 Batch: WG1055361-2 WG1055361-3									
Heptachlor epoxide	62		74		50-120	18		30	B
Oxychlordane	61		75		50-120	21		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	60		70		30-150	A
BZ 198	66		80		30-150	A
DBOB	59		68		30-150	B
BZ 198	65		74		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 Batch: WG1055392-2 WG1055392-3									
Hexachlorobenzene	54		49	Q	50-120	10		30	A
gamma-BHC	58		52		50-120	11		30	A
Heptachlor	58		51		50-120	13		30	A
Aldrin	57		50		50-120	13		30	A
trans-Chlordane	64		58		50-120	10		30	A
Endosulfan I	64		58		50-120	10		30	A
cis-Chlordane	60		55		50-120	9		30	A
trans-Nonachlor	61		56		50-120	9		30	A
4,4'-DDE	67		62		50-120	8		30	A
Dieldrin	69		63		50-120	9		30	A
Endrin	63		57		50-120	10		30	A
4,4'-DDD	62		58		50-120	7		30	A
cis-Nonachlor	65		61		50-120	6		30	A
4,4'-DDT	58		55		50-120	5		30	A
Methoxychlor	49	Q	45	Q	50-120	9		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	61		52		30-150	A
BZ 198	63		57		30-150	A
DBOB	63		53		30-150	B
BZ 198	63		56		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 Batch: WG1055392-2 WG1055392-3									
Heptachlor epoxide	67		58		50-120	14		30	B
Oxychlordane	66		57		50-120	15		30	B
Endosulfan II	66		59		50-120	11		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	61		52		30-150	A
BZ 198	63		57		30-150	A
DBOB	63		53		30-150	B
BZ 198	63		56		30-150	B

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 Batch: WG1055417-2 WG1055417-3									
Hexachlorobenzene	69		54		50-120	24		30	A
gamma-BHC	77		62		50-120	22		30	A
Heptachlor	76		61		50-120	22		30	A
Aldrin	72		60		50-120	18		30	A
trans-Chlordane	84		75		50-120	11		30	A
Endosulfan I	84		75		50-120	11		30	A
cis-Chlordane	79		71		50-120	11		30	A
trans-Nonachlor	80		72		50-120	11		30	A
4,4'-DDE	90		82		50-120	9		30	A
Dieldrin	91		82		50-120	10		30	A
Endrin	83		73		50-120	13		30	A
4,4'-DDD	85		77		50-120	10		30	A
cis-Nonachlor	88		80		50-120	10		30	A
4,4'-DDT	82		74		50-120	10		30	A
Methoxychlor	72		67		50-120	7		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	78		60		30-150	A
BZ 198	84		79		30-150	A
DBOB	76		57		30-150	B
BZ 198	84		75		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 Batch: WG1055417-2 WG1055417-3									
Heptachlor epoxide	84		73		50-120	14		30	B
Oxychlordane	84		72		50-120	15		30	B
Endosulfan II	85		78		50-120	9		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	78		60		30-150	A
BZ 198	84		79		30-150	A
DBOB	76		57		30-150	B
BZ 198	84		75		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055361-6 WG1055361-7 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A													
Hexachlorobenzene	ND	98.8	55.7	56		50.7	52		50-120	9		30	A
gamma-BHC	ND	98.8	66.0	67		58.4	60		50-120	12		30	A
Heptachlor	ND	98.8	60.2	61		57.1	58		50-120	5		30	A
Aldrin	ND	98.8	59.8	61		56.8	58		50-120	5		30	A
Heptachlor epoxide	ND	98.8	53.4	54		49.8	51		50-120	7		30	B
Oxychlordane	ND	98.8	48.8	49	Q	46.4	47	Q	50-120	5		30	B
trans-Chlordane	ND	98.8	61.2	62		57.1	58		50-120	7		30	A
Endosulfan I	ND	98.8	60.8	62		55.6	57		50-120	9		30	A
cis-Chlordane	ND	98.8	56.8	58		53.0	54		50-120	7		30	A
trans-Nonachlor	ND	98.8	58.1	59		54.4	56		50-120	7		30	A
4,4'-DDE	ND	98.8	65.4	66		60.7	62		50-120	7		30	A
Dieldrin	ND	98.8	62.6	63		56.8	58		50-120	10		30	A
Endrin	0.601	98.8	58.1	58		50.8	51		50-120	13		30	A
Endosulfan II	ND	98.8	56.9	58		51.6	53		50-120	10		30	B
4,4'-DDD	ND	98.8	68.8	70		62.5	64		50-120	10		30	A
cis-Nonachlor	ND	98.8	64.2	65		59.0	60		50-120	8		30	A
4,4'-DDT	ND	98.8	54.7	55		49.8	51		50-120	9		30	A
Methoxychlor	ND	98.8	54.8	56		46.0	47	Q	50-120	17		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
BZ 198	68		64		30-150	A
DBOB	67		59		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055361-6 WG1055361-7 QC Sample: L1735126-01 Client ID: MN
 NATIVE BACKGROUND REP A

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	73		65		30-150	B
DBOB	62		55		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab COMPOSITE 2 REP A Associated sample(s): 21-40 QC Batch ID: WG1055392-6 WG1055392-7 QC Sample: L1735126-21 Client ID: MN													
Hexachlorobenzene	ND	92.8	58.2	63		49.8	56		50-120	16		30	A
gamma-BHC	ND	92.8	58.3	63		55.6	63		50-120	5		30	A
Heptachlor	ND	92.8	54.9	59		51.2	58		50-120	7		30	A
Aldrin	ND	92.8	53.8	56		50.7	55		50-120	6		30	A
Heptachlor epoxide	ND	92.8	45.0	49	Q	43.3	49	Q	50-120	4		30	B
Oxychlordane	ND	92.8	44.8	48	Q	42.4	48	Q	50-120	6		30	B
trans-Chlordane	ND	92.8	54.2	58		51.5	58		50-120	5		30	A
Endosulfan I	ND	92.8	53.5	58		51.1	58		50-120	5		30	A
cis-Chlordane	ND	92.8	47.1	51		44.9	51		50-120	5		30	A
trans-Nonachlor	ND	92.8	51.1	55		48.4	55		50-120	5		30	A
4,4'-DDE	2.11	92.8	57.2	59		53.8	58		50-120	6		30	A
Dieldrin	1.26	92.8	57.2	60		54.3	60		50-120	5		30	A
Endrin	1.71	92.8	52.2	54		49.3	54		50-120	6		30	A
Endosulfan II	ND	92.8	51.7	56		49.3	56		50-120	5		30	B
4,4'-DDD	1.96	92.8	56.2	59		55.1	60		50-120	2		30	A
cis-Nonachlor	ND	92.8	55.1	59		53.0	60		50-120	4		30	A
4,4'-DDT	1.33	92.8	53.0	56		50.8	56		50-120	4		30	A
Methoxychlor	ND	92.8	52.1	56		49.2	55		50-120	6		30	A

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	66		67		30-150	A
DBOB	63		60		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055392-6 WG1055392-7 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	67		64		30-150	B
DBOB	59		59		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab COMPOSITE 6 REP A Associated sample(s): 41-55 QC Batch ID: WG1055417-6 WG1055417-7 QC Sample: L1735126-41 Client ID: MN													
Hexachlorobenzene	ND	87.4	64.1	73		57.0	64		50-120	12		30	A
gamma-BHC	ND	87.4	73.7	84		65.4	74		50-120	12		30	A
Heptachlor	ND	87.4	66.1	76		60.0	67		50-120	10		30	A
Aldrin	ND	87.4	66.2	76		60.9	69		50-120	8		30	A
Heptachlor epoxide	ND	87.4	58.5	67		56.6	64		50-120	3		30	B
Oxychlordane	ND	87.4	59.2	68		55.8	63		50-120	6		30	B
trans-Chlordane	ND	87.4	71.2	82		66.2	74		50-120	7		30	A
Endosulfan I	ND	87.4	68.1	78		62.2	70		50-120	9		30	A
cis-Chlordane	ND	87.4	60.8	69		59.3	66		50-120	2		30	A
trans-Nonachlor	ND	87.4	65.2	75		59.8	67		50-120	9		30	A
4,4'-DDE	1.50	87.4	38.4	42	Q	32.4	35	Q	50-120	17		30	A
Dieldrin	0.743	87.4	72.7	82		64.6	72		50-120	12		30	A
Endrin	0.847	87.4	67.5	76		60.8	67		50-120	10		30	A
Endosulfan II	ND	87.4	64.7	73		60.3	67		50-120	7		30	B
4,4'-DDD	ND	87.4	77.2	88		70.8	79		50-120	9		30	A
cis-Nonachlor	ND	87.4	43.9	50		39.8	45	Q	50-120	10		30	A
4,4'-DDT	0.848	87.4	61.4	69		55.0	61		50-120	11		30	A
Methoxychlor	ND	87.4	60.5	69		52.2	59		50-120	15		30	A

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	83		229	Q	30-150	A
DBOB	84		72		30-150	A

Matrix Spike Analysis*Batch Quality Control***Project Name:** USACE/NHH FNP**Lab Number:** L1735126**Project Number:** 60543021**Report Date:** 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055417-6 WG1055417-7 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	86		81		30-150	B
DBOB	67		67		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055361-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 B
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	0.601	0.790IP	ug/kg	27		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1055361-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		70		30-150	A
BZ 198	79		70		30-150	A
DBOB	56		67		30-150	B
BZ 198	76		73		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055392-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	2.11	1.16	ug/kg	58	Q	30 A
Endrin	1.71	1.04IP	ug/kg	49	Q	30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	1.33	NDP	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		56		30-150	A
BZ 198	76		55		30-150	A
DBOB	65		51		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1055392-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	74		57		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055417-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
4,4'-DDE	1.50	0.745IP	ug/kg	67	Q	30 A
Dieldrin	0.743	0.685IP	ug/kg	8		30 A
Endrin	0.847	0.623IP	ug/kg	30		30 A
Endosulfan II	1.58	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	0.848	0.895IP	ug/kg	5		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	80		76		30-150	A
BZ 198	76		76		30-150	A
DBOB	79		73		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1055417-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	79		76		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055361-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	44		40-140
4,4'-DDE	74		40-140
4,4'-DDD	105		40-140
DBOB (Surrogate)	70		30-150
DBOB (Surrogate)	76		30-150
BZ 198 (Surrogate)	75		30-150
BZ 198 (Surrogate)	77		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055392-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	50		40-140
4,4'-DDE	58		40-140
4,4'-DDD	78		40-140
DBOB (Surrogate)	63		30-150
DBOB (Surrogate)	92		30-150
BZ 198 (Surrogate)	62		30-150
BZ 198 (Surrogate)	65		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1055417-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	64		40-140
4,4'-DDE	63		40-140
4,4'-DDD	125		40-140
DBOB (Surrogate)	70		30-150
DBOB (Surrogate)	74		30-150
BZ 198 (Surrogate)	79		30-150
BZ 198 (Surrogate)	80		30-150

METALS

Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-01

Date Collected: 09/28/17 16:00

Client ID: MN NATIVE BACKGROUND REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.30		mg/kg	0.097	0.033	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Cadmium, Total	0.029	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Chromium, Total	0.063	J	mg/kg	0.388	0.035	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Copper, Total	1.43		mg/kg	0.097	0.032	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Lead, Total	0.135		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/13/17 09:00	10/21/17 12:25	EPA 7474	1,7474	BV
Nickel, Total	0.185		mg/kg	0.097	0.036	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV
Zinc, Total	10.8		mg/kg	0.971	0.145	2	10/13/17 09:01	10/21/17 15:13	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-02

Date Collected: 09/28/17 16:00

Client ID: MN NATIVE BACKGROUND REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.28		mg/kg	0.093	0.032	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Cadmium, Total	0.034	J	mg/kg	0.037	0.010	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Chromium, Total	0.042	J	mg/kg	0.370	0.033	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Copper, Total	1.30		mg/kg	0.093	0.031	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Lead, Total	0.111		mg/kg	0.037	0.005	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 12:38	EPA 7474	1,7474	BV
Nickel, Total	0.181		mg/kg	0.093	0.034	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV
Zinc, Total	9.72		mg/kg	0.926	0.138	2	10/13/17 09:01	10/21/17 15:33	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-03

Date Collected: 09/28/17 16:00

Client ID: MN NATIVE BACKGROUND REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.36		mg/kg	0.096	0.033	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Cadmium, Total	0.067		mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Chromium, Total	0.091	J	mg/kg	0.385	0.035	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Copper, Total	1.61		mg/kg	0.096	0.032	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Lead, Total	0.231		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 12:40	EPA 7474	1,7474	BV
Nickel, Total	0.186		mg/kg	0.096	0.036	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV
Zinc, Total	16.2		mg/kg	0.962	0.143	2	10/13/17 09:01	10/21/17 15:37	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-04

Date Collected: 09/28/17 16:00

Client ID: MN NATIVE BACKGROUND REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.04		mg/kg	0.096	0.033	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Cadmium, Total	0.033	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Chromium, Total	0.057	J	mg/kg	0.385	0.035	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Copper, Total	1.12		mg/kg	0.096	0.032	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Lead, Total	0.113		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 12:43	EPA 7474	1,7474	BV
Nickel, Total	0.134		mg/kg	0.096	0.036	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV
Zinc, Total	11.0		mg/kg	0.962	0.143	2	10/13/17 09:01	10/21/17 15:41	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-05

Date Collected: 09/28/17 16:00

Client ID: MN NATIVE BACKGROUND REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.25		mg/kg	0.098	0.034	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Cadmium, Total	0.035	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Chromium, Total	0.092	J	mg/kg	0.392	0.035	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Copper, Total	1.41		mg/kg	0.098	0.033	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Lead, Total	0.136		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/13/17 09:00	10/21/17 14:36	EPA 7474	1,7474	BV
Nickel, Total	0.219		mg/kg	0.098	0.037	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV
Zinc, Total	12.4		mg/kg	0.980	0.146	2	10/13/17 09:01	10/21/17 15:45	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-06

Date Collected: 09/28/17 16:30

Client ID: MN LABORATORY CONTROL REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.51		mg/kg	0.089	0.031	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Cadmium, Total	0.022	J	mg/kg	0.036	0.009	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Chromium, Total	0.074	J	mg/kg	0.357	0.032	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Copper, Total	0.869		mg/kg	0.089	0.030	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Lead, Total	0.154		mg/kg	0.036	0.005	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.011	0.003	5	10/13/17 09:00	10/21/17 14:39	EPA 7474	1,7474	BV
Nickel, Total	0.244		mg/kg	0.089	0.033	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV
Zinc, Total	5.92		mg/kg	0.893	0.133	2	10/13/17 09:01	10/21/17 15:49	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-07

Date Collected: 09/28/17 16:30

Client ID: MN LABORATORY CONTROL REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.83		mg/kg	0.095	0.033	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Cadmium, Total	0.022	J	mg/kg	0.038	0.010	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Chromium, Total	0.107	J	mg/kg	0.381	0.034	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Copper, Total	1.08		mg/kg	0.095	0.032	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Lead, Total	0.156		mg/kg	0.038	0.006	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 14:41	EPA 7474	1,7474	BV
Nickel, Total	0.254		mg/kg	0.095	0.035	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV
Zinc, Total	7.08		mg/kg	0.952	0.142	2	10/13/17 09:01	10/21/17 16:06	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-08

Date Collected: 09/28/17 16:30

Client ID: MN LABORATORY CONTROL REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.69		mg/kg	0.092	0.032	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Cadmium, Total	0.085		mg/kg	0.037	0.010	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Chromium, Total	0.203	J	mg/kg	0.367	0.033	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Copper, Total	1.30		mg/kg	0.092	0.031	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Lead, Total	0.356		mg/kg	0.037	0.005	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Mercury, Total	0.005	J	mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 14:44	EPA 7474	1,7474	BV
Nickel, Total	0.454		mg/kg	0.092	0.034	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV
Zinc, Total	16.5		mg/kg	0.917	0.137	2	10/13/17 09:01	10/21/17 16:10	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-09

Date Collected: 09/28/17 16:30

Client ID: MN LABORATORY CONTROL REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.85		mg/kg	0.096	0.033	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Cadmium, Total	0.015	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Chromium, Total	0.095	J	mg/kg	0.385	0.035	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Copper, Total	1.16		mg/kg	0.096	0.032	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Lead, Total	0.162		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 14:46	EPA 7474	1,7474	BV
Nickel, Total	0.239		mg/kg	0.096	0.036	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV
Zinc, Total	6.76		mg/kg	0.962	0.143	2	10/13/17 09:01	10/21/17 16:14	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-10

Date Collected: 09/28/17 16:30

Client ID: MN LABORATORY CONTROL REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.61		mg/kg	0.096	0.033	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Cadmium, Total	0.017	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Chromium, Total	0.074	J	mg/kg	0.385	0.035	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Copper, Total	0.893		mg/kg	0.096	0.032	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Lead, Total	0.148		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 14:53	EPA 7474	1,7474	BV
Nickel, Total	0.186		mg/kg	0.096	0.036	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV
Zinc, Total	7.77		mg/kg	0.962	0.143	2	10/13/17 09:01	10/21/17 16:18	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-11

Date Collected: 09/29/17 08:00

Client ID: MN CLDS REFERENCE SEDIMENT REP

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.53		mg/kg	0.098	0.034	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Cadmium, Total	0.023	J	mg/kg	0.039	0.010	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Chromium, Total	0.165	J	mg/kg	0.392	0.035	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Copper, Total	2.27		mg/kg	0.098	0.033	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Lead, Total	0.290		mg/kg	0.039	0.006	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/13/17 09:00	10/21/17 14:56	EPA 7474	1,7474	BV
Nickel, Total	0.459		mg/kg	0.098	0.037	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV
Zinc, Total	9.66		mg/kg	0.980	0.146	2	10/13/17 09:01	10/21/17 16:22	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-12

Date Collected: 09/29/17 08:00

Client ID: MN CLDS REFERENCE SEDIMENT REP

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.07		mg/kg	0.099	0.034	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Cadmium, Total	0.029	J	mg/kg	0.040	0.010	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Chromium, Total	0.470		mg/kg	0.396	0.036	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Copper, Total	1.70		mg/kg	0.099	0.033	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Lead, Total	0.494		mg/kg	0.040	0.006	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Mercury, Total	0.004	J	mg/kg	0.012	0.004	5	10/13/17 09:00	10/21/17 14:58	EPA 7474	1,7474	BV
Nickel, Total	0.508		mg/kg	0.099	0.037	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV
Zinc, Total	12.3		mg/kg	0.990	0.148	2	10/13/17 09:01	10/21/17 16:26	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-13

Date Collected: 09/29/17 08:00

Client ID: MN CLDS REFERENCE SEDIMENT REP

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.54		mg/kg	0.095	0.033	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Cadmium, Total	0.033	J	mg/kg	0.038	0.010	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Chromium, Total	0.182	J	mg/kg	0.381	0.034	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Copper, Total	1.75		mg/kg	0.095	0.032	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Lead, Total	0.323		mg/kg	0.038	0.006	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 15:01	EPA 7474	1,7474	BV
Nickel, Total	0.324		mg/kg	0.095	0.035	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV
Zinc, Total	11.0		mg/kg	0.952	0.142	2	10/13/17 09:01	10/21/17 16:30	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-14

Date Collected: 09/29/17 08:00

Client ID: MN CLDS REFERENCE SEDIMENT REP

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.70		mg/kg	0.094	0.032	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Cadmium, Total	0.035	J	mg/kg	0.038	0.010	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Chromium, Total	0.314	J	mg/kg	0.377	0.034	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Copper, Total	2.38		mg/kg	0.094	0.032	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Lead, Total	0.448		mg/kg	0.038	0.005	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 15:03	EPA 7474	1,7474	BV
Nickel, Total	0.429		mg/kg	0.094	0.035	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV
Zinc, Total	13.7		mg/kg	0.943	0.140	2	10/13/17 09:01	10/21/17 16:35	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-15

Date Collected: 09/29/17 08:00

Client ID: MN CLDS REFERENCE SEDIMENT REP

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.16		mg/kg	0.098	0.034	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Cadmium, Total	0.019	J	mg/kg	0.039	0.010	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Chromium, Total	0.094	J	mg/kg	0.392	0.035	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Copper, Total	1.24		mg/kg	0.098	0.033	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Lead, Total	0.185		mg/kg	0.039	0.006	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/17/17 08:36	10/21/17 15:41	EPA 7474	1,7474	BV
Nickel, Total	0.215		mg/kg	0.098	0.037	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV
Zinc, Total	9.30		mg/kg	0.980	0.146	2	10/17/17 08:36	10/21/17 16:59	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-16

Date Collected: 09/29/17 08:15

Client ID: MN COMPOSITE 1 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.36		mg/kg	0.091	0.031	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Cadmium, Total	0.012	J	mg/kg	0.036	0.010	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Chromium, Total	0.067	J	mg/kg	0.364	0.033	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Copper, Total	0.699		mg/kg	0.091	0.030	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Lead, Total	0.095		mg/kg	0.036	0.005	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.011	0.003	5	10/17/17 08:36	10/21/17 15:43	EPA 7474	1,7474	BV
Nickel, Total	0.141		mg/kg	0.091	0.034	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV
Zinc, Total	5.64		mg/kg	0.909	0.135	2	10/17/17 08:36	10/21/17 17:03	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-17

Date Collected: 09/29/17 08:15

Client ID: MN COMPOSITE 1 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.73		mg/kg	0.097	0.033	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Cadmium, Total	0.042		mg/kg	0.039	0.010	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Chromium, Total	0.255	J	mg/kg	0.388	0.035	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Copper, Total	2.17		mg/kg	0.097	0.032	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Lead, Total	0.339		mg/kg	0.039	0.006	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/17/17 08:36	10/21/17 15:46	EPA 7474	1,7474	BV
Nickel, Total	0.326		mg/kg	0.097	0.036	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV
Zinc, Total	14.6		mg/kg	0.971	0.145	2	10/17/17 08:36	10/21/17 17:57	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-18

Date Collected: 09/29/17 08:15

Client ID: MN COMPOSITE 1 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.89		mg/kg	0.099	0.034	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Cadmium, Total	0.016	J	mg/kg	0.040	0.010	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Chromium, Total	0.208	J	mg/kg	0.396	0.036	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Copper, Total	1.62		mg/kg	0.099	0.033	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Lead, Total	0.231		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/17/17 08:36	10/21/17 15:48	EPA 7474	1,7474	BV
Nickel, Total	0.273		mg/kg	0.099	0.037	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV
Zinc, Total	9.80		mg/kg	0.990	0.148	2	10/17/17 08:36	10/21/17 18:01	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-19

Date Collected: 09/29/17 08:15

Client ID: MN COMPOSITE 1 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.12		mg/kg	0.095	0.033	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Cadmium, Total	0.016	J	mg/kg	0.038	0.010	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Chromium, Total	0.116	J	mg/kg	0.381	0.034	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Copper, Total	0.907		mg/kg	0.095	0.032	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Lead, Total	0.174		mg/kg	0.038	0.006	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/17/17 08:36	10/21/17 15:51	EPA 7474	1,7474	BV
Nickel, Total	0.222		mg/kg	0.095	0.035	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV
Zinc, Total	6.24		mg/kg	0.952	0.142	2	10/17/17 08:36	10/21/17 18:05	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-20

Date Collected: 09/29/17 08:15

Client ID: MN COMPOSITE 1 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.07		mg/kg	0.100	0.034	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Cadmium, Total	0.016	J	mg/kg	0.040	0.011	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Chromium, Total	0.085	J	mg/kg	0.400	0.036	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Copper, Total	1.01		mg/kg	0.100	0.033	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Lead, Total	0.123		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/17/17 08:36	10/21/17 15:53	EPA 7474	1,7474	BV
Nickel, Total	0.174		mg/kg	0.100	0.037	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV
Zinc, Total	5.68		mg/kg	1.00	0.149	2	10/17/17 08:36	10/21/17 18:09	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-21

Date Collected: 09/29/17 08:30

Client ID: MN COMPOSITE 2 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.36		mg/kg	0.100	0.034	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Cadmium, Total	0.034	J	mg/kg	0.040	0.011	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Chromium, Total	0.218	J	mg/kg	0.400	0.036	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Copper, Total	1.35		mg/kg	0.100	0.033	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Lead, Total	0.290		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/17/17 08:36	10/21/17 15:23	EPA 7474	1,7474	BV
Nickel, Total	0.347		mg/kg	0.100	0.037	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV
Zinc, Total	8.64		mg/kg	1.00	0.149	2	10/17/17 08:36	10/21/17 17:07	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-22

Date Collected: 09/29/17 08:30

Client ID: MN COMPOSITE 2 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.48		mg/kg	0.097	0.033	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Cadmium, Total	0.023	J	mg/kg	0.039	0.010	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Chromium, Total	0.178	J	mg/kg	0.388	0.035	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Copper, Total	1.72		mg/kg	0.097	0.032	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Lead, Total	0.194		mg/kg	0.039	0.006	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/17/17 08:36	10/21/17 15:56	EPA 7474	1,7474	BV
Nickel, Total	0.245		mg/kg	0.097	0.036	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV
Zinc, Total	6.90		mg/kg	0.971	0.145	2	10/17/17 08:36	10/21/17 18:13	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-23

Date Collected: 09/29/17 08:30

Client ID: MN COMPOSITE 2 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.05		mg/kg	0.100	0.034	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Cadmium, Total	0.016	J	mg/kg	0.040	0.011	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Chromium, Total	0.131	J	mg/kg	0.400	0.036	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Copper, Total	0.993		mg/kg	0.100	0.033	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Lead, Total	0.154		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/17/17 08:36	10/21/17 15:58	EPA 7474	1,7474	BV
Nickel, Total	0.154		mg/kg	0.100	0.037	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV
Zinc, Total	4.72		mg/kg	1.00	0.149	2	10/17/17 08:36	10/21/17 18:17	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-24

Date Collected: 09/29/17 08:30

Client ID: MN COMPOSITE 2 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.91		mg/kg	0.099	0.034	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Cadmium, Total	0.021	J	mg/kg	0.040	0.010	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Chromium, Total	0.214	J	mg/kg	0.396	0.036	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Copper, Total	1.79		mg/kg	0.099	0.033	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Lead, Total	0.215		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/17/17 08:36	10/21/17 16:01	EPA 7474	1,7474	BV
Nickel, Total	0.277		mg/kg	0.099	0.037	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV
Zinc, Total	6.95		mg/kg	0.990	0.148	2	10/17/17 08:36	10/21/17 18:30	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-25

Date Collected: 09/29/17 08:30

Client ID: MN COMPOSITE 2 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.53		mg/kg	0.090	0.031	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Cadmium, Total	0.023	J	mg/kg	0.036	0.009	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Chromium, Total	0.401		mg/kg	0.360	0.032	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Copper, Total	2.45		mg/kg	0.090	0.030	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Lead, Total	0.649		mg/kg	0.036	0.005	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.011	0.003	5	10/09/17 10:14	10/24/17 13:21	EPA 7474	1,7474	BV
Nickel, Total	0.366		mg/kg	0.090	0.034	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM
Zinc, Total	9.93		mg/kg	0.901	0.134	2	10/09/17 10:30	10/10/17 16:50	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-26

Date Collected: 09/29/17 08:45

Client ID: MN COMPOSITE 3 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.63		mg/kg	0.096	0.033	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Cadmium, Total	0.030	J	mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Chromium, Total	0.115	J	mg/kg	0.385	0.035	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Copper, Total	1.39		mg/kg	0.096	0.032	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Lead, Total	0.243		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/09/17 10:14	10/24/17 13:24	EPA 7474	1,7474	BV
Nickel, Total	0.168		mg/kg	0.096	0.036	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM
Zinc, Total	6.50		mg/kg	0.962	0.143	2	10/09/17 10:30	10/10/17 16:54	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-27

Date Collected: 09/29/17 08:45

Client ID: MN COMPOSITE 3 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.20		mg/kg	0.100	0.034	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Cadmium, Total	0.013	J	mg/kg	0.040	0.011	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Chromium, Total	0.084	J	mg/kg	0.400	0.036	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Copper, Total	0.920		mg/kg	0.100	0.033	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Lead, Total	0.171		mg/kg	0.040	0.006	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/09/17 10:14	10/24/17 13:26	EPA 7474	1,7474	BV
Nickel, Total	0.159		mg/kg	0.100	0.037	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM
Zinc, Total	4.85		mg/kg	1.00	0.149	2	10/09/17 10:30	10/10/17 16:58	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-28

Date Collected: 09/29/17 08:45

Client ID: MN COMPOSITE 3 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.11		mg/kg	0.100	0.034	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Cadmium, Total	0.029	J	mg/kg	0.040	0.011	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Chromium, Total	0.160	J	mg/kg	0.400	0.036	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Copper, Total	1.06		mg/kg	0.100	0.033	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Lead, Total	0.231		mg/kg	0.040	0.006	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/09/17 10:14	10/24/17 13:29	EPA 7474	1,7474	BV
Nickel, Total	0.261		mg/kg	0.100	0.037	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM
Zinc, Total	7.67		mg/kg	1.00	0.149	2	10/09/17 10:30	10/10/17 17:01	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-29

Date Collected: 09/29/17 08:45

Client ID: MN COMPOSITE 3 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.05		mg/kg	0.097	0.033	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Cadmium, Total	0.027	J	mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Chromium, Total	0.544		mg/kg	0.388	0.035	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Copper, Total	2.40		mg/kg	0.097	0.032	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Lead, Total	0.514		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Mercury, Total	0.004	J	mg/kg	0.012	0.004	5	10/09/17 10:14	10/24/17 13:31	EPA 7474	1,7474	BV
Nickel, Total	0.408		mg/kg	0.097	0.036	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM
Zinc, Total	11.5		mg/kg	0.971	0.145	2	10/09/17 10:30	10/10/17 17:05	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-30

Date Collected: 09/29/17 08:45

Client ID: MN COMPOSITE 3 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.78		mg/kg	0.093	0.032	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Cadmium, Total	0.025	J	mg/kg	0.037	0.010	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Chromium, Total	0.230	J	mg/kg	0.370	0.033	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Copper, Total	1.62		mg/kg	0.093	0.031	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Lead, Total	0.265		mg/kg	0.037	0.005	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Mercury, Total	0.004	J	mg/kg	0.012	0.003	5	10/09/17 10:14	10/24/17 13:39	EPA 7474	1,7474	BV
Nickel, Total	0.285		mg/kg	0.093	0.034	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM
Zinc, Total	10.6		mg/kg	0.926	0.138	2	10/09/17 10:30	10/10/17 17:21	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-31

Date Collected: 09/29/17 09:00

Client ID: MN COMPOSITE 4 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.88		mg/kg	0.100	0.034	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Cadmium, Total	0.046		mg/kg	0.040	0.011	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Chromium, Total	0.701		mg/kg	0.400	0.036	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Copper, Total	3.13		mg/kg	0.100	0.033	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Lead, Total	0.790		mg/kg	0.040	0.006	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Mercury, Total	0.009	J	mg/kg	0.013	0.004	5	10/09/17 10:14	10/24/17 13:41	EPA 7474	1,7474	BV
Nickel, Total	0.480		mg/kg	0.100	0.037	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM
Zinc, Total	12.1		mg/kg	1.00	0.149	2	10/09/17 10:30	10/10/17 17:24	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-32

Date Collected: 09/29/17 09:00

Client ID: MN COMPOSITE 4 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.06		mg/kg	0.097	0.033	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Cadmium, Total	0.041		mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Chromium, Total	0.487		mg/kg	0.388	0.035	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Copper, Total	2.44		mg/kg	0.097	0.032	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Lead, Total	0.643		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Mercury, Total	0.005	J	mg/kg	0.012	0.004	5	10/09/17 10:14	10/24/17 13:44	EPA 7474	1,7474	BV
Nickel, Total	0.422		mg/kg	0.097	0.036	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM
Zinc, Total	11.3		mg/kg	0.971	0.145	2	10/09/17 10:30	10/10/17 17:28	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-33

Date Collected: 09/29/17 09:00

Client ID: MN COMPOSITE 4 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.92		mg/kg	0.093	0.032	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Cadmium, Total	0.018	J	mg/kg	0.037	0.010	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Chromium, Total	0.168	J	mg/kg	0.370	0.033	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Copper, Total	1.08		mg/kg	0.093	0.031	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Lead, Total	0.291		mg/kg	0.037	0.005	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/09/17 10:14	10/24/17 13:46	EPA 7474	1,7474	BV
Nickel, Total	0.238		mg/kg	0.093	0.034	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM
Zinc, Total	6.54		mg/kg	0.926	0.138	2	10/09/17 10:30	10/10/17 17:32	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-34

Date Collected: 09/29/17 09:00

Client ID: MN COMPOSITE 4 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.87		mg/kg	0.093	0.032	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Cadmium, Total	0.069		mg/kg	0.037	0.010	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Chromium, Total	0.424		mg/kg	0.370	0.033	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Copper, Total	3.36		mg/kg	0.093	0.031	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Lead, Total	0.663		mg/kg	0.037	0.005	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/05/17 14:00	10/20/17 12:56	EPA 7474	1,7474	BV
Nickel, Total	0.301		mg/kg	0.093	0.034	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM
Zinc, Total	14.4		mg/kg	0.926	0.138	2	10/05/17 11:23	10/10/17 15:03	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-35

Date Collected: 09/29/17 09:00

Client ID: MN COMPOSITE 4 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.28		mg/kg	0.099	0.034	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Cadmium, Total	0.050		mg/kg	0.040	0.010	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Chromium, Total	0.299	J	mg/kg	0.396	0.036	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Copper, Total	2.30		mg/kg	0.099	0.033	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Lead, Total	0.560		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 12:59	EPA 7474	1,7474	BV
Nickel, Total	0.320		mg/kg	0.099	0.037	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM
Zinc, Total	16.8		mg/kg	0.990	0.148	2	10/05/17 11:23	10/10/17 15:07	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-36

Date Collected: 09/29/17 09:30

Client ID: MN COMPOSITE 5 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.90		mg/kg	0.098	0.034	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038	J	mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Chromium, Total	0.268	J	mg/kg	0.392	0.035	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Copper, Total	11.3		mg/kg	0.098	0.033	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Lead, Total	0.469		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 13:01	EPA 7474	1,7474	BV
Nickel, Total	0.320		mg/kg	0.098	0.037	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM
Zinc, Total	9.88		mg/kg	0.980	0.146	2	10/05/17 11:23	10/10/17 15:11	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-37

Date Collected: 09/29/17 09:30

Client ID: MN COMPOSITE 5 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.42		mg/kg	0.093	0.032	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Cadmium, Total	0.028	J	mg/kg	0.037	0.010	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Chromium, Total	0.222	J	mg/kg	0.370	0.033	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Copper, Total	1.76		mg/kg	0.093	0.031	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Lead, Total	0.292		mg/kg	0.037	0.005	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/05/17 14:00	10/20/17 13:04	EPA 7474	1,7474	BV
Nickel, Total	0.351		mg/kg	0.093	0.034	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM
Zinc, Total	9.46		mg/kg	0.926	0.138	2	10/05/17 11:23	10/10/17 15:15	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-38

Date Collected: 09/29/17 09:30

Client ID: MN COMPOSITE 5 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.03		mg/kg	0.097	0.033	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Cadmium, Total	0.029	J	mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Chromium, Total	0.228	J	mg/kg	0.388	0.035	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Copper, Total	1.72		mg/kg	0.097	0.032	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Lead, Total	0.281		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 13:06	EPA 7474	1,7474	BV
Nickel, Total	0.274		mg/kg	0.097	0.036	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM
Zinc, Total	10.9		mg/kg	0.971	0.145	2	10/05/17 11:23	10/10/17 15:18	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-39

Date Collected: 09/29/17 09:30

Client ID: MN COMPOSITE 5 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.39		mg/kg	0.100	0.034	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Cadmium, Total	0.031	J	mg/kg	0.040	0.011	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Chromium, Total	0.207	J	mg/kg	0.400	0.036	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Copper, Total	2.25		mg/kg	0.100	0.033	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Lead, Total	0.360		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/05/17 14:00	10/20/17 13:09	EPA 7474	1,7474	BV
Nickel, Total	0.303		mg/kg	0.100	0.037	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM
Zinc, Total	11.7		mg/kg	1.00	0.149	2	10/05/17 11:23	10/10/17 15:22	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-40

Date Collected: 09/29/17 09:30

Client ID: MN COMPOSITE 5 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.17		mg/kg	0.100	0.034	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Cadmium, Total	0.060		mg/kg	0.040	0.011	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Chromium, Total	0.390	J	mg/kg	0.400	0.036	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Copper, Total	2.34		mg/kg	0.100	0.033	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Lead, Total	0.541		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/05/17 14:00	10/20/17 13:11	EPA 7474	1,7474	BV
Nickel, Total	0.417		mg/kg	0.100	0.037	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM
Zinc, Total	12.9		mg/kg	1.00	0.149	2	10/05/17 11:23	10/10/17 15:26	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-41

Date Collected: 09/29/17 10:00

Client ID: MN COMPOSITE 6 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.16		mg/kg	0.097	0.033	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Cadmium, Total	0.070		mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Chromium, Total	0.973		mg/kg	0.388	0.035	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Copper, Total	3.42		mg/kg	0.097	0.032	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Lead, Total	1.04		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 12:38	EPA 7474	1,7474	BV
Nickel, Total	0.502		mg/kg	0.097	0.036	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM
Zinc, Total	13.7		mg/kg	0.971	0.145	2	10/05/17 11:23	10/10/17 14:31	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-42

Date Collected: 09/29/17 10:00

Client ID: MN COMPOSITE 6 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.43		mg/kg	0.097	0.033	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Cadmium, Total	0.056		mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Chromium, Total	0.614		mg/kg	0.388	0.035	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Copper, Total	2.57		mg/kg	0.097	0.032	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Lead, Total	0.685		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 13:14	EPA 7474	1,7474	BV
Nickel, Total	0.326		mg/kg	0.097	0.036	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM
Zinc, Total	11.3		mg/kg	0.971	0.145	2	10/05/17 11:23	10/10/17 15:30	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-43

Date Collected: 09/29/17 10:00

Client ID: MN COMPOSITE 6 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.19		mg/kg	0.098	0.034	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Cadmium, Total	0.050		mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Chromium, Total	0.720		mg/kg	0.392	0.035	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Copper, Total	3.27		mg/kg	0.098	0.033	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Lead, Total	0.911		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 13:16	EPA 7474	1,7474	BV
Nickel, Total	0.395		mg/kg	0.098	0.037	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM
Zinc, Total	12.1		mg/kg	0.980	0.146	2	10/05/17 11:23	10/10/17 15:34	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-44

Date Collected: 09/29/17 10:00

Client ID: MN COMPOSITE 6 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.71		mg/kg	0.097	0.033	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Cadmium, Total	0.079		mg/kg	0.039	0.010	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Chromium, Total	0.660		mg/kg	0.388	0.035	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Copper, Total	2.96		mg/kg	0.097	0.032	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Lead, Total	0.795		mg/kg	0.039	0.006	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.004	5	10/05/17 14:00	10/20/17 13:19	EPA 7474	1,7474	BV
Nickel, Total	0.448		mg/kg	0.097	0.036	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM
Zinc, Total	12.4		mg/kg	0.971	0.145	2	10/05/17 11:23	10/10/17 15:37	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-45

Date Collected: 09/29/17 10:00

Client ID: MN COMPOSITE 6 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.77		mg/kg	0.094	0.032	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Cadmium, Total	0.058		mg/kg	0.038	0.010	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Chromium, Total	0.606		mg/kg	0.377	0.034	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Copper, Total	2.73		mg/kg	0.094	0.032	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Lead, Total	0.691		mg/kg	0.038	0.005	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/05/17 14:00	10/20/17 13:26	EPA 7474	1,7474	BV
Nickel, Total	0.368		mg/kg	0.094	0.035	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM
Zinc, Total	14.2		mg/kg	0.943	0.140	2	10/05/17 11:23	10/10/17 16:04	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-46

Date Collected: 09/29/17 10:15

Client ID: MN COMPOSITE 7 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.28		mg/kg	0.100	0.034	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Cadmium, Total	0.054		mg/kg	0.040	0.011	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Chromium, Total	0.789		mg/kg	0.400	0.036	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Copper, Total	3.22		mg/kg	0.100	0.033	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Lead, Total	0.964		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/05/17 14:00	10/20/17 13:29	EPA 7474	1,7474	BV
Nickel, Total	0.431		mg/kg	0.100	0.037	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM
Zinc, Total	11.5		mg/kg	1.00	0.149	2	10/05/17 11:23	10/10/17 16:08	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-47

Date Collected: 09/29/17 10:15

Client ID: MN COMPOSITE 7 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.53		mg/kg	0.100	0.034	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Cadmium, Total	0.069		mg/kg	0.040	0.011	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Chromium, Total	0.461		mg/kg	0.400	0.036	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Copper, Total	2.38		mg/kg	0.100	0.033	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Lead, Total	0.725		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/05/17 14:00	10/20/17 13:31	EPA 7474	1,7474	BV
Nickel, Total	0.457		mg/kg	0.100	0.037	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM
Zinc, Total	11.6		mg/kg	1.00	0.149	2	10/05/17 11:23	10/10/17 16:12	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-48

Date Collected: 09/29/17 10:15

Client ID: MN COMPOSITE 7 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.63		mg/kg	0.093	0.032	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038		mg/kg	0.037	0.010	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Chromium, Total	0.254	J	mg/kg	0.374	0.034	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Copper, Total	1.71		mg/kg	0.093	0.031	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Lead, Total	0.378		mg/kg	0.037	0.005	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/05/17 14:00	10/20/17 13:34	EPA 7474	1,7474	BV
Nickel, Total	0.269		mg/kg	0.093	0.035	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM
Zinc, Total	7.00		mg/kg	0.934	0.139	2	10/05/17 11:23	10/10/17 16:16	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-49

Date Collected: 09/29/17 10:15

Client ID: MN COMPOSITE 7 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.13		mg/kg	0.096	0.033	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Cadmium, Total	0.040		mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Chromium, Total	0.622		mg/kg	0.385	0.035	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Copper, Total	2.18		mg/kg	0.096	0.032	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Lead, Total	0.902		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/09/17 10:14	10/24/17 13:04	EPA 7474	1,7474	BV
Nickel, Total	0.324		mg/kg	0.096	0.036	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM
Zinc, Total	13.3		mg/kg	0.962	0.143	2	10/09/17 10:30	10/10/17 16:20	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-50

Date Collected: 09/29/17 10:15

Client ID: MN COMPOSITE 7 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.94		mg/kg	0.098	0.034	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Cadmium, Total	0.026	J	mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Chromium, Total	0.342	J	mg/kg	0.392	0.035	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Copper, Total	3.60		mg/kg	0.098	0.033	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Lead, Total	0.534		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Mercury, Total	0.005	J	mg/kg	0.012	0.004	5	10/09/17 10:14	10/24/17 13:49	EPA 7474	1,7474	BV
Nickel, Total	0.342		mg/kg	0.098	0.037	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM
Zinc, Total	9.53		mg/kg	0.980	0.146	2	10/09/17 10:30	10/10/17 17:36	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-51

Date Collected: 09/29/17 11:00

Client ID: MN COMPOSITE 8 REP A

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.06		mg/kg	0.098	0.034	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Cadmium, Total	0.034	J	mg/kg	0.039	0.010	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Chromium, Total	0.743		mg/kg	0.392	0.035	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Copper, Total	2.38		mg/kg	0.098	0.033	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Lead, Total	0.828		mg/kg	0.039	0.006	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Mercury, Total	0.004	J	mg/kg	0.012	0.004	5	10/09/17 10:14	10/24/17 13:51	EPA 7474	1,7474	BV
Nickel, Total	0.404		mg/kg	0.098	0.037	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM
Zinc, Total	8.95		mg/kg	0.980	0.146	2	10/09/17 10:30	10/10/17 17:39	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-52

Date Collected: 09/29/17 11:00

Client ID: MN COMPOSITE 8 REP B

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.53		mg/kg	0.100	0.034	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Cadmium, Total	0.074		mg/kg	0.040	0.011	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Chromium, Total	0.618		mg/kg	0.400	0.036	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Copper, Total	3.11		mg/kg	0.100	0.033	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Lead, Total	0.891		mg/kg	0.040	0.006	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Mercury, Total	0.005	J	mg/kg	0.013	0.004	5	10/09/17 10:14	10/24/17 13:54	EPA 7474	1,7474	BV
Nickel, Total	0.411		mg/kg	0.100	0.037	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM
Zinc, Total	12.0		mg/kg	1.00	0.149	2	10/09/17 10:30	10/10/17 17:43	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-53

Date Collected: 09/29/17 11:00

Client ID: MN COMPOSITE 8 REP C

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.02		mg/kg	0.092	0.032	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Cadmium, Total	0.026	J	mg/kg	0.037	0.010	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Chromium, Total	0.452		mg/kg	0.367	0.033	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Copper, Total	2.22		mg/kg	0.092	0.031	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Lead, Total	0.564		mg/kg	0.037	0.005	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.012	0.003	5	10/09/17 10:14	10/24/17 13:56	EPA 7474	1,7474	BV
Nickel, Total	0.288		mg/kg	0.092	0.034	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM
Zinc, Total	8.72		mg/kg	0.917	0.137	2	10/09/17 10:30	10/10/17 17:47	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-54

Date Collected: 09/29/17 11:00

Client ID: MN COMPOSITE 8 REP D

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.90		mg/kg	0.089	0.031	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Cadmium, Total	0.039		mg/kg	0.036	0.009	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Chromium, Total	0.330	J	mg/kg	0.357	0.032	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Copper, Total	2.52		mg/kg	0.089	0.030	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Lead, Total	0.588		mg/kg	0.036	0.005	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Mercury, Total	ND		mg/kg	0.011	0.003	5	10/09/17 10:14	10/24/17 13:59	EPA 7474	1,7474	BV
Nickel, Total	0.332		mg/kg	0.089	0.033	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM
Zinc, Total	13.7		mg/kg	0.893	0.133	2	10/09/17 10:30	10/10/17 17:51	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-55

Date Collected: 09/29/17 11:00

Client ID: MN COMPOSITE 8 REP E

Date Received: 09/29/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.15		mg/kg	0.094	0.032	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Cadmium, Total	0.036	J	mg/kg	0.038	0.010	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Chromium, Total	0.527		mg/kg	0.377	0.034	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Copper, Total	2.45		mg/kg	0.094	0.032	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Lead, Total	0.546		mg/kg	0.038	0.005	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Mercury, Total	0.005	J	mg/kg	0.012	0.003	5	10/13/17 09:00	10/21/17 15:06	EPA 7474	1,7474	BV
Nickel, Total	0.523		mg/kg	0.094	0.035	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV
Zinc, Total	12.5		mg/kg	0.943	0.140	2	10/13/17 09:01	10/21/17 16:39	EPA 3051A	1,6020A	BV



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 34-48 Batch: WG1049111-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/05/17 11:23	10/10/17 14:16	1,6020A	AM

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 34-48 Batch: WG1049114-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/05/17 14:00	10/20/17 12:33	1,7474	BV

Prep Information

Digestion Method: EPA 7474

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 25-33,49-54 Batch: WG1050284-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/09/17 10:30	10/10/17 15:49	1,6020A	AM



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3051A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 25-33,49-54 Batch: WG1050285-1									
Mercury, Total	ND	mg/kg	0.013	0.004	5	10/09/17 10:14	10/24/17 12:59	1,7474	BV

Prep Information

Digestion Method: EPA 7474

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14,55 Batch: WG1051696-1									
Arsenic, Total	ND	mg/kg	0.100	0.034	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Cadmium, Total	ND	mg/kg	0.040	0.011	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Chromium, Total	ND	mg/kg	0.400	0.036	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Copper, Total	ND	mg/kg	0.100	0.033	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Lead, Total	ND	mg/kg	0.040	0.006	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Nickel, Total	ND	mg/kg	0.100	0.037	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV
Zinc, Total	ND	mg/kg	1.00	0.149	2	10/13/17 09:01	10/21/17 14:18	1,6020A	BV

Prep Information

Digestion Method: EPA 3051A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14,55 Batch: WG1051698-1									
Mercury, Total	ND	mg/kg	0.013	0.004	5	10/13/17 09:00	10/21/17 12:20	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15-24 Batch: WG1052852-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Copper, Total	ND		mg/kg	0.100	0.033	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Lead, Total	ND		mg/kg	0.040	0.006	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV
Zinc, Total	0.414	J	mg/kg	1.00	0.149	2	10/17/17 08:36	10/21/17 16:02	1,6020A	BV

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15-24 Batch: WG1052853-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/17/17 08:36	10/21/17 15:18	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 34-48 Batch: WG1049111-2								
Arsenic, Total	97		-		75-125	-		20
Cadmium, Total	102		-		75-125	-		20
Chromium, Total	97		-		75-125	-		20
Copper, Total	98		-		75-125	-		20
Lead, Total	99		-		75-125	-		20
Nickel, Total	96		-		75-125	-		20
Zinc, Total	92		-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 34-48 Batch: WG1049114-2 SRM Lot Number: HPHGAF								
Mercury, Total	95		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 Batch: WG1050284-2								
Arsenic, Total	101		-		75-125	-		20
Cadmium, Total	109		-		75-125	-		20
Chromium, Total	103		-		75-125	-		20
Copper, Total	103		-		75-125	-		20
Lead, Total	106		-		75-125	-		20
Nickel, Total	102		-		75-125	-		20
Zinc, Total	98		-		75-125	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 Batch: WG1050285-2 SRM Lot Number: HPHGAF					
Mercury, Total	101	-	80-120	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-14,55 Batch: WG1051696-2					
Arsenic, Total	101	-	75-125	-	20
Cadmium, Total	99	-	75-125	-	20
Chromium, Total	94	-	75-125	-	20
Copper, Total	98	-	75-125	-	20
Lead, Total	102	-	75-125	-	20
Nickel, Total	94	-	75-125	-	20
Zinc, Total	96	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-14,55 Batch: WG1051698-2 SRM Lot Number: HPHGAF					
Mercury, Total	99	-	80-120	-	20

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15-24 Batch: WG1052852-2					
Arsenic, Total	100	-	75-125	-	20
Cadmium, Total	104	-	75-125	-	20
Chromium, Total	96	-	75-125	-	20
Copper, Total	100	-	75-125	-	20
Lead, Total	101	-	75-125	-	20
Nickel, Total	95	-	75-125	-	20
Zinc, Total	100	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 15-24 Batch: WG1052853-2 SRM Lot Number: HPHGAF					
Mercury, Total	86	-	80-120	-	20

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 34-48 QC Batch ID: WG1049111-3 WG1049111-4 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A												
Arsenic, Total	2.16	11.8	13.6	97		13.7	104		75-125	1		20
Cadmium, Total	0.070	5	5.24	103		5.04	105		75-125	4		20
Chromium, Total	0.973	19.6	19.5	94		19.7	101		75-125	1		20
Copper, Total	3.42	24.5	27.4	98		26.9	101		75-125	2		20
Lead, Total	1.04	50	50.7	99		50.2	104		75-125	1		20
Nickel, Total	0.502	49	47.0	95		47.0	100		75-125	0		20
Zinc, Total	13.7	49	59.9	94		59.9	100		75-125	0		20

Total Metals - Mansfield Lab Associated sample(s): 34-48 QC Batch ID: WG1049114-3 WG1049114-4 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A

Mercury, Total	ND	0.584	0.559	96		0.627	101		80-120	11		20
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Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 QC Batch ID: WG1050284-3 WG1050284-4 QC Sample: L1735126-49 Client ID: MN COMPOSITE 7 REP D

Arsenic, Total	2.13	10.9	11.8	89		13.3	96		75-125	12		20
Cadmium, Total	0.040	4.64	4.50	96		5.16	103		75-125	14		20
Chromium, Total	0.622	18.2	16.8	89		19.2	96		75-125	13		20
Copper, Total	2.18	22.7	23.2	92		25.6	96		75-125	10		20
Lead, Total	0.902	46.4	44.6	94		49.8	99		75-125	11		20
Nickel, Total	0.324	45.4	41.6	91		47.7	98		75-125	14		20
Zinc, Total	13.3	45.4	49.7	80		54.5	85		75-125	9		20

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 QC Batch ID: WG1050285-3 WG1050285-4 QC Sample: L1735126-49 Client ID: MN
 COMPOSITE 7 REP D

Mercury, Total	ND	0.568	0.568	100	0.606	98	80-120	6	20
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Total Metals - Mansfield Lab Associated sample(s): 01-14,55 QC Batch ID: WG1051696-3 WG1051696-4 QC Sample: L1735126-01 Client ID: MN
 NATIVE BACKGROUND REP A

Arsenic, Total	1.30	11.4	12.6	99	12.7	98	75-125	1	20
Cadmium, Total	0.029J	4.86	5.01	103	5.11	103	75-125	2	20
Chromium, Total	0.063J	19	18.9	99	18.9	97	75-125	0	20
Copper, Total	1.43	23.8	24.8	98	25.1	98	75-125	1	20
Lead, Total	0.135	48.6	49.2	101	49.4	99	75-125	0	20
Nickel, Total	0.185	47.6	46.4	97	46.5	95	75-125	0	20
Zinc, Total	10.8	47.6	62.5	108	62.6	107	75-125	0	20

Total Metals - Mansfield Lab Associated sample(s): 01-14,55 QC Batch ID: WG1051698-3 WG1051698-4 QC Sample: L1735126-01 Client ID: MN
 NATIVE BACKGROUND REP A

Mercury, Total	ND	0.625	0.575	92	0.550	92	80-120	4	20
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Matrix Spike Analysis Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15-24 QC Batch ID: WG1052852-3 WG1052852-4 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A									
Arsenic, Total	2.36	11.2	12.7	92	13.7	98	75-125	8	20
Cadmium, Total	0.034J	4.77	4.73	99	5.03	102	75-125	6	20
Chromium, Total	0.218J	18.7	17.4	93	18.3	95	75-125	5	20
Copper, Total	1.35	23.4	23.5	95	24.6	97	75-125	5	20
Lead, Total	0.290	47.7	47.0	98	49.6	100	75-125	5	20
Nickel, Total	0.347	46.7	43.2	92	45.2	93	75-125	5	20
Zinc, Total	8.64	46.7	51.2	91	54.9	96	75-125	7	20

Total Metals - Mansfield Lab Associated sample(s): 15-24 QC Batch ID: WG1052853-3 WG1052853-4 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A

Mercury, Total	ND	0.619	0.475	77	Q	0.462	78	Q	80-120	3	20
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Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 34-48 QC Batch ID: WG1049111-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Arsenic, Total	2.16	2.21	mg/kg	2		20
Cadmium, Total	0.070	0.061	mg/kg	13		20
Chromium, Total	0.973	0.778	mg/kg	22	Q	20
Copper, Total	3.42	3.31	mg/kg	3		20
Lead, Total	1.04	0.883	mg/kg	16		20
Nickel, Total	0.502	0.470	mg/kg	7		20
Zinc, Total	13.7	12.9	mg/kg	6		20
Total Metals - Mansfield Lab Associated sample(s): 34-48 QC Batch ID: WG1049114-5 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Mercury, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 QC Batch ID: WG1050284-5 QC Sample: L1735126-49 Client ID: MN COMPOSITE 7 REP D						
Arsenic, Total	2.13	1.77	mg/kg	18		20
Cadmium, Total	0.040	0.037J	mg/kg	NC		20
Chromium, Total	0.622	0.406	mg/kg	42	Q	20
Copper, Total	2.18	1.71	mg/kg	24	Q	20
Lead, Total	0.902	0.518	mg/kg	54	Q	20
Nickel, Total	0.324	0.290	mg/kg	11		20
Zinc, Total	13.3	8.03	mg/kg	49	Q	20

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 25-33,49-54 QC Batch ID: WG1050285-5 QC Sample: L1735126-49 Client ID: MN COMPOSITE 7 REP D					
Mercury, Total	ND	ND	mg/kg	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01-14,55 QC Batch ID: WG1051696-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A					
Arsenic, Total	1.30	1.31	mg/kg	1	20
Cadmium, Total	0.029J	0.042	mg/kg	NC	20
Chromium, Total	0.063J	0.061J	mg/kg	NC	20
Copper, Total	1.43	1.42	mg/kg	1	20
Lead, Total	0.135	0.204	mg/kg	41	Q 20
Nickel, Total	0.185	0.159	mg/kg	15	20
Zinc, Total	10.8	16.0	mg/kg	39	Q 20
Total Metals - Mansfield Lab Associated sample(s): 01-14,55 QC Batch ID: WG1051698-5 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A					
Mercury, Total	ND	ND	mg/kg	NC	20

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15-24 QC Batch ID: WG1052852-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A					
Arsenic, Total	2.36	2.51	mg/kg	6	20
Cadmium, Total	0.034J	0.027J	mg/kg	NC	20
Chromium, Total	0.218J	0.177J	mg/kg	NC	20
Copper, Total	1.35	1.35	mg/kg	0	20
Lead, Total	0.290	0.236	mg/kg	21	Q 20
Nickel, Total	0.347	0.203	mg/kg	52	Q 20
Zinc, Total	8.64	9.33	mg/kg	8	20
Total Metals - Mansfield Lab Associated sample(s): 15-24 QC Batch ID: WG1052853-5 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A					
Mercury, Total	ND	ND	mg/kg	NC	20

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1049111-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	71		65-139
Cadmium, Total	78		67-135
Copper, Total	92		65-138
Lead, Total	101		56-155
Zinc, Total	68		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1049114-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	70		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1050284-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	74		65-139
Cadmium, Total	81		67-135
Copper, Total	92		65-138
Lead, Total	94		56-155
Zinc, Total	70		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1050285-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	118		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1051696-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	92		65-139
Cadmium, Total	94		67-135
Copper, Total	98		65-138
Lead, Total	95		56-155
Zinc, Total	97		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1051698-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	64		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1052852-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	91		65-139
Cadmium, Total	94		67-135
Copper, Total	96		65-138
Lead, Total	96		56-155
Vanadium, Total	95		62-145
Zinc, Total	97		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1052853-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	74		41-183

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-01
 Client ID: MN NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/28/17 16:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.659		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-02
Client ID: MN NATIVE BACKGROUND REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/28/17 16:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	91.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.811		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-03

Client ID: MN NATIVE BACKGROUND REP C

Sample Location: NEW HAVEN, CT

Matrix: Tissue

Date Collected: 09/28/17 16:00

Date Received: 09/29/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.529		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-04
Client ID: MN NATIVE BACKGROUND REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/28/17 16:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.519		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS****Lab ID:** L1735126-05**Client ID:** MN NATIVE BACKGROUND REP E**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/28/17 16:00**Date Received:** 09/29/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.509		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-06
Client ID: MN LABORATORY CONTROL REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/28/17 16:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.321		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-07
Client ID: MN LABORATORY CONTROL REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/28/17 16:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.412		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS****Lab ID:** L1735126-08**Client ID:** MN LABORATORY CONTROL REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/28/17 16:30**Date Received:** 09/29/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	91.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.506		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS****Lab ID:** L1735126-09**Client ID:** MN LABORATORY CONTROL REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/28/17 16:30**Date Received:** 09/29/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.330		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-10
Client ID: MN LABORATORY CONTROL REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/28/17 16:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	94.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.451		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-11
Client ID: MN CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.463		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-12
Client ID: MN CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.505		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-13
Client ID: MN CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.507		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-14
Client ID: MN CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.657		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-15
Client ID: MN CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.451		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-16
Client ID: MN COMPOSITE 1 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	95.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.497		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-17
Client ID: MN COMPOSITE 1 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.643		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-18
Client ID: MN COMPOSITE 1 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.629		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-19
Client ID: MN COMPOSITE 1 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.343		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-20
 Client ID: MN COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 08:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	94.0		%	0.100	0.100	1	-	10/25/17 16:00	121,2540G	SP
Percent Lipids	0.486		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-21
Client ID: MN COMPOSITE 2 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.462		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-22
Client ID: MN COMPOSITE 2 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.414		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-23
Client ID: MN COMPOSITE 2 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.453		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-24
Client ID: MN COMPOSITE 2 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.428		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-25
Client ID: MN COMPOSITE 2 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.773		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-26
Client ID: MN COMPOSITE 3 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:45
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.412		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-27
Client ID: MN COMPOSITE 3 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:45
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	94.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.473		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-28
Client ID: MN COMPOSITE 3 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:45
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.441		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-29
 Client ID: MN COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 08:45
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.516		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-30
Client ID: MN COMPOSITE 3 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 08:45
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.450		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-31
 Client ID: MN COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.406		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-32
 Client ID: MN COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 09:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.699		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-33
Client ID: MN COMPOSITE 4 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	93.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.414		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-34
Client ID: MN COMPOSITE 4 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.575		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-35
Client ID: MN COMPOSITE 4 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.473		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-36
Client ID: MN COMPOSITE 5 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	91.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.443		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-37
Client ID: MN COMPOSITE 5 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.641		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-38
Client ID: MN COMPOSITE 5 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.769		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-39
Client ID: MN COMPOSITE 5 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	85.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.883		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-40
Client ID: MN COMPOSITE 5 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 09:30
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 16:30	121,2540G	SP
Percent Lipids	0.669		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-41
Client ID: MN COMPOSITE 6 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.804		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-42
Client ID: MN COMPOSITE 6 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	92.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.580		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-43
Client ID: MN COMPOSITE 6 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.694		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-44
Client ID: MN COMPOSITE 6 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.787		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-45
 Client ID: MN COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 10:00
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.626		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-46
 Client ID: MN COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.908		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-47
 Client ID: MN COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.622		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735126

Report Date: 11/10/17

SAMPLE RESULTS

Lab ID: L1735126-48
 Client ID: MN COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 10:15
 Date Received: 09/29/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	94.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.632		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-49
Client ID: MN COMPOSITE 7 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	91.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.417		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-50
Client ID: MN COMPOSITE 7 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 10:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.598		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-51
Client ID: MN COMPOSITE 8 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 11:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	91.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.568		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-52
Client ID: MN COMPOSITE 8 REP B
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 11:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.757		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-53
Client ID: MN COMPOSITE 8 REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 11:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	95.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.750		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-54
Client ID: MN COMPOSITE 8 REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 11:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.540		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735126**Report Date:** 11/10/17**SAMPLE RESULTS**

Lab ID: L1735126-55
Client ID: MN COMPOSITE 8 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 11:00
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	85.0		%	0.100	0.100	1	-	10/25/17 17:30	121,2540G	SP
Percent Lipids	0.734		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Lab Number: L1735126

Project Number: 60543021

Report Date: 11/10/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab for sample(s): 01-20 Batch: WG1056543-1										
Percent Lipids	ND		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO
General Chemistry - Mansfield Lab for sample(s): 41-55 Batch: WG1056545-1										
Percent Lipids	ND		%	0.100	NA	1	-	10/27/17 00:00	111,-	KO
General Chemistry - Mansfield Lab for sample(s): 21-40 Batch: WG1056950-1										
Percent Lipids	ND		%	0.100	NA	1	-	10/30/17 00:00	111,-	KO



Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1056069-1 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						
Moisture	92.0	92.0	%	0		10
General Chemistry - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1056073-1 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						
Moisture	93.0	94.0	%	1		10
General Chemistry - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1056075-1 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Moisture	86.0	85.0	%	1		10
General Chemistry - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1056543-2 QC Sample: L1735126-01 Client ID: MN NATIVE BACKGROUND REP A						
Percent Lipids	0.659	0.620	%	6		20
General Chemistry - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1056545-2 QC Sample: L1735126-41 Client ID: MN COMPOSITE 6 REP A						
Percent Lipids	0.804	0.731	%	10		20
General Chemistry - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1056950-2 QC Sample: L1735126-21 Client ID: MN COMPOSITE 2 REP A						
Percent Lipids	0.462	0.391	%	17		20

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11101716:51
Lab Number: L1735126
Report Date: 11/10/17

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-01A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-02A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-03A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-04A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-05A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:11101716:51
Lab Number: L1735126
Report Date: 11/10/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-06A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-07A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-08A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-09A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-10A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-11A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:11101716:51
Lab Number: L1735126
Report Date: 11/10/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-12A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-13A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-14A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-15A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-16A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-17A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:11101716:51
Lab Number: L1735126
Report Date: 11/10/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-18A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-19A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-20A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-21A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-22A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-23A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No:11101716:51
Lab Number: L1735126
Report Date: 11/10/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-24A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-25A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-26A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-27A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-28A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-29A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-30A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-31A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-32A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-33A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-34A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-35A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-36A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-37A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-38A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-39A	Glass 250ml/8oz unpreserved	A	NA		5.3	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-40A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-41A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

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L1735126-42A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-43A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-44A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-45A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-46A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-47A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735126-48A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-49A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-50A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-51A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-52A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-53A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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L1735126-54A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735126-55A	Glass 250ml/8oz unpreserved	B	NA		5.9	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

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projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735126
Report Date: 11/10/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 111 NOAA Technical Memorandum NOS ORCA 130: Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project: 1993-196 Update. March 1998.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 10

Department: **Quality Assurance**

Published Date: 1/16/2017 11:00:05 AM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	No – PCB RLs slightly elevated; Methoxychlor
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No – See Narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – See Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	N/A
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	No	CCV- opening for method blank, LCS,LCSD: Benzo(b)fluoranthene @ 20% CCV- opening for SRM: Benzo(b)fluoranthene @20% CCV- opening for L1735126-01,01D, 01MS, 01MSD: Benzo(k)fluoranthene @ 17%, dibenz(a,h)anthracene @ 20% CCV – opening for L1735126-02 through-20: Benz(a)anthracene @ 17%, Dibenz(a,h)anthracene @20%, Benzo(g,h,i)perylene @ 17%, CCV – opening for L1735126-41, 41D, 41MS, 41MSD through -55: Benzo(b)fluoranthene @ 18%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes.	No	L1735126-41 MS: Naphthalene @ 48%, Acenaphthylene @ 48%, Acenaphthene @ 46%, Fluorene	In Data Package

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QC Summary Tables
US Army Corps of Engineers

	(Recovery Limits 50 to 120%; RPD <30%)		<p>@ 48%, Anthracene @ 43%, Chrysene @ 42%, Benzo(k)fluoranthene @ 45%</p> <p>MSD: Naphthalene @ 40%, Acenaphthylene @ 41%, Acenaphthene @ 39%, Fluorene @ 41%, Phenanthrene @ 49%, Anthracene @ 38%, Fluoranthene @ 43%, Pyrene @ 40%, Chrysene @ 36%, Benzo(k)fluoranthene @ 37%, Benzo(a)pyrene @ 45%, Dibenz(a,h)anthracene @ 47%, Benzo(g,h,i)perylene @ 48%</p> <p>RPD: Benzo(a)pyrene @ 37%</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV1: opening for Blank,LCS,LCSD L1735126-01, 01D, 01MS, 01MSD: Column a: gamma-BHC @ 18% Column b: gamma-BHC @ 23%, Aldrin @ 19%, Dieldrin @ 16% CCV2:opening for L1735126-02 through 20: Column a: gamma-BHC @ 19%, Aldrin @ 18%, Methoxychlor @ 20% Column b : gamma-BHC @ 22%, Heptachlor @ 16%, Aldrin @ 20%, Dieldrin @ 16%, 4,4-DDD @ 18% CCV3: opening for Blank2, LCS2, LCSD2, L1735126-21, 21D, 21MS, 21MSD: Column a : gamma-BHC @ 18%, Aldrin @ 17% Column b : gamma-BHC @ 25%, Aldrin @ 21%, heptachlor epoxide b @ 16%, Endosulfan I @ 16%, Dieldrin @ 18% CCV4: opening for L1735126-22 through -40	Retained at Lab

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QC Summary Tables
US Army Corps of Engineers

			Column a: gamma-BHC @ 22%, heptachlor @ 16%, Aldrin @ 20%, Dieldrin @ 16% Column b: gamma-BHC @ 20%, Aldrin @ 16% CCV5: opening for Blank3, LCS3, LCSD3, SRM: Column a : gamma-BHC @ 18%, Aldrin @ 16% CCV6: opening for L1735126-41, 41D, 41MS, 41MSD, 42-55: Column a: gamma-BHC @ 17%, Aldrin @ 16%	
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735126-01: MS: Oxychlorthane @ 49% MSD: Methoxychlor @ 47%, Oxychlorthane @ 47% L1735126-21: MS: Heptachlor epoxide @ 49%, Oxychlorthane @ 48% MSD: Heptachlor @ 49%, Oxychlorthane @ 48% L1735126-55: 4,4'-DDE (42%/35%) and cis-Nonachlor (45%-MSD only)	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735126-21D: 4,4-DDE @ 58%, endrin @ 49% L1735126-41D: 4,4-DDE @ 67%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	L1735126-41MSD: BZ198 @ 229% on column a	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV- opening for L1735126-01,01D, 01MS, 01MSD: C18-BZ#195 @ 17%, C19-BZ#206 @ 21%, C110-BZ#209 @ 16% CCV – opening for L1735126-02 through-20: C17-BZ#170 @ 18%, C18-BZ#195 @ 20%, C19-BZ#206 @ 21%,	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM2: C13-BZ#28 @ 898% SRM3: C13-BZ#28 @ 448%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735126-01: MS: C13-BZ#18 @ 131%, C14-BZ#49 @ 46%, C17-BZ#183 @ 46% MSD: C13-BZ#18 @ 125% L1735126-21: MS: C13-BZ#18 @ 135% MSD: C13-BZ#18 @ 124% L1735126-41: MS: C12-BZ#8 @ 48%, C14-BZ#49 @ 40%, C15-BZ#105 @ 42%, C17-BZ#180	In Data Package



QC Summary Tables
US Army Corps of Engineers

			@ 49%, C17-BZ#183 @ 39% MSD: C12-BZ#8 @ 44%, C14-BZ#44 @ 46%, C14-BZ#49 @ 38%, C15-BZ#87 @ 47%, C15-BZ#101 @ 48%, C15-BZ#105 @ 40%, C15-BZ#118 @ 49%, C16-BZ#128 @ 47%, C16-BZ#138 @ 49%, C17-BZ#170 @ 49%, C17-BZ#180 @ 44%, C17-BZ#183 @ 37%, C17-BZ#184 @ 48%, C18-BZ#195 @ 49%, C110-BZ#209 @ 47%	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	No	L1735126-21: (Hg 77%/78%)	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735126-41: (Cr 22%), L1735126-49: (Cr 42%, Cu 24%, Pb 54%, Zn 49%), L1735126-01: (Pb 41%, Zn 39%), L1735126-21: (Pb 21%, Ni 52%)	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.



EnviroSystems, Inc.
1 Lafayette Road
Hampton, NH 03842

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No:

Serial_No:11101716:51

L1735126

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:	
001	Mn Native Background Rep A	09/28/17	1600	ESI		1	9 oz	G	Frozen	Solid	N		0
002	Mn Native Background Rep B					1	9 oz	G	Frozen	Solid	N		0
003	Mn Native Background Rep C					1	9 oz	G	Frozen	Solid	N		0
004	Mn Native Background Rep D					1	9 oz	G	Frozen	Solid	N		0
005	Mn Native Background Rep E					1	9 oz	G	Frozen	Solid	N		0
006	Mn Laboratory Control Rep A		1630			1	9 oz	G	Frozen	Solid	N		0
007	Mn Laboratory Control Rep B					1	9 oz	G	Frozen	Solid	N		0
008	Mn Laboratory Control Rep C					1	9 oz	G	Frozen	Solid	N		0
009	Mn Laboratory Control Rep D					1	9 oz	G	Frozen	Solid	N		0
010	Mn Laboratory Control Rep E					1	9 oz	G	Frozen	Solid	N		0
011	Mn CLDS Reference Sediment Rep A	09/29/17	0800			1	9 oz	G	Frozen	Solid	N		0
012	Mn CLDS Reference Sediment Rep B					1	9 oz	G	Frozen	Solid	N		0

Relinquished By:	Date: 09/29/17 Time: 1620	Received By:	Date: 9/29/17 Time: 16:20
Relinquished By:	Date: 9/29/17 Time: 18:30	Received at Lab By:	Date: 9/29/17 Time: 1830

Comments:

ERR

09/30/17

0725

9/30/17 0725

COC Number: A1015431

Sample Delivery Group No: September 2017

Page of



EnviroSystems, Inc.
1 Lafayette Road
Hampton, NH 03842

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No:

Serial_No:11101716:51

L1735126

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
013	Mn CLDS Reference Sediment Rep C	09/29/17	0800	ESI		1	9 oz	G	Frozen	Solid	N	*
014	Mn CLDS Reference Sediment Rep D					1	9 oz	G	Frozen	Solid	N	*
015	Mn CLDS Reference Sediment Rep E					1	9 oz	G	Frozen	Solid	N	*
016	Mn Composite 1 Rep A		0815			1	9 oz	G	Frozen	Solid	N	*
017	Mn Composite 1 Rep B					1	9 oz	G	Frozen	Solid	N	*
018	Mn Composite 1 Rep C					1	9 oz	G	Frozen	Solid	N	*
019	Mn Composite 1 Rep D					1	9 oz	G	Frozen	Solid	N	*
020	Mn Composite 1 Rep E					1	9 oz	G	Frozen	Solid	N	*
021	Mn Composite 2 Rep A		0830			1	9 oz	G	Frozen	Solid	N	*
022	Mn Composite 2 Rep B					1	9 oz	G	Frozen	Solid	N	*
023	Mn Composite 2 Rep C					1	9 oz	G	Frozen	Solid	N	*
024	Mn Composite 2 Rep D					1	9 oz	G	Frozen	Solid	N	*

Relinquished By:	Date: 09/29/17 Time: 1620	Received By:	Date: 9/29/17 Time: 16:20
Relinquished By:	Date: 9/29/17 Time: 18:30	Received at Lab By:	Date: 9/29/17 Time: 1830

Comments:

ERR

09/30/17

0725

COC Number: A1015431

Sample Delivery Group No:

September 2017

Page

of



EnviroSystems, Inc.
1 Lafayette Road
Hampton, NH 03842

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No:

Serial_No:11101716:51

L1735126

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
025	Mn Composite 2 Rep E	09/29/17	0830	ESI		1	9 oz	G	Frozen	Solid	N	*
026	Mn Composite 3 Rep A		0845			1	9 oz	G	Frozen	Solid	N	*
027	Mn Composite 3 Rep B					1	9 oz	G	Frozen	Solid	N	*
028	Mn Composite 3 Rep C					1	9 oz	G	Frozen	Solid	N	*
029	Mn Composite 3 Rep D					1	9 oz	G	Frozen	Solid	N	*
030	Mn Composite 3 Rep E					1	9 oz	G	Frozen	Solid	N	*
031	Mn Composite 4 Rep A		0900			1	9 oz	G	Frozen	Solid	N	*
032	Mn Composite 4 Rep B					1	9 oz	G	Frozen	Solid	N	*
033	Mn Composite 4 Rep C					1	9 oz	G	Frozen	Solid	N	*
034	Mn Composite 4 Rep D					1	9 oz	G	Frozen	Solid	N	*
035	Mn Composite 4 Rep E					1	9 oz	G	Frozen	Solid	N	*
036	Mn Composite 5 Rep A		0930			1	9 oz	G	Frozen	Solid	N	*

Relinquished By:  Date: 09/29/17 Time: 1620

Received By:  Date: 09/29/17 Time: 16:20

Relinquished By: John Schupp AAL Date: 9/29/17 Time: 18:30

Received at Lab By:  Date: 9/29/17 Time: 1830

Comments:

ERR 

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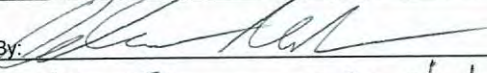
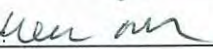
4735124

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
037	Mn Composite 5 Rep B	09/29/17	0930	ESM		1	9 oz	G	Frozen	Solid	N	*
038	Mn Composite 5 Rep C					1	9 oz	G	Frozen	Solid	N	*
039	Mn Composite 5 Rep D					1	9 oz	G	Frozen	Solid	N	*
040	Mn Composite 5 Rep E					1	9 oz	G	Frozen	Solid	N	*
041	Mn Composite 6 Rep A		1000			1	9 oz	G	Frozen	Solid	N	*
042	Mn Composite 6 Rep B					1	9 oz	G	Frozen	Solid	N	*
043	Mn Composite 6 Rep C					1	9 oz	G	Frozen	Solid	N	*
044	Mn Composite 6 Rep D					1	9 oz	G	Frozen	Solid	N	*
045	Mn Composite 6 Rep E					1	9 oz	G	Frozen	Solid	N	*
046	Mn Composite 7 Rep A		1015			1	9 oz	G	Frozen	Solid	N	*
047	Mn Composite 7 Rep B					1	9 oz	G	Frozen	Solid	N	*
048	Mn Composite 7 Rep C					1	9 oz	G	Frozen	Solid	N	*

Relinquished By: 	Date: 09/29/17 Time: 1620	Received By: John Schuyler AAL	Date: 9/29/17 Time: 16:20
Relinquished By: John Schuyler AAL	Date: 9/29/17 Time: 18:30	Received at Lab By: 	Date: 9/29/17 Time: 1830

Comments:

ERR

COC Number: A1015431

Sample Delivery Group No:

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L1735124

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
049	Mn Composite 7 Rep D	09/29/17	1015	ESI		1	9 oz	G	Frozen	Solid	N	*
050	Mn Composite 7 Rep E		↓			1	9 oz	G	Frozen	Solid	N	*
051	Mn Composite 8 Rep A		1100			1	9 oz	G	Frozen	Solid	N	*
052	Mn Composite 8 Rep B		↓			1	9 oz	G	Frozen	Solid	N	*
053	Mn Composite 8 Rep C		↓			1	9 oz	G	Frozen	Solid	N	*
054	Mn Composite 8 Rep D		↓			1	9 oz	G	Frozen	Solid	N	*
055	Mn Composite 8 Rep E		↓			1	9 oz	G	Frozen	Solid	N	*

Relinquished By: <i>[Signature]</i>	Date: 09/29/17 Time: 1620	Received By: <i>[Signature]</i> AAL	Date: 9/29/17 Time: 16:20
Relinquished By: <i>[Signature]</i> AAL	Date: 9/29/17 Time: 18:30	Received at Lab By: <i>[Signature]</i>	Date: 9/29/17 Time: 1830

Comments:

ERR *[Signature]*

09/30/17 0725

[Signature] 9/30/17 0725

COC Number: A1015431

Sample Delivery Group No: September 2017 Page of



ANALYTICAL REPORT

Lab Number:	L1735250
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	Ryan McCarthy
Phone:	(978) 833-6950
Project Name:	USACE/NHH FNP
Project Number:	60543021
Report Date:	11/20/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735250-01	NV NATIVE BACKGROUND REP A	TISSUE	NEW HAVEN, CT	10/04/17 16:20	10/05/17
L1735250-02	NV NATIVE BACKGROUND REP B	TISSUE	NEW HAVEN, CT	10/04/17 16:20	10/05/17
L1735250-03	NV NATIVE BACKGROUND REP C	TISSUE	NEW HAVEN, CT	10/04/17 16:20	10/05/17
L1735250-04	NV NATIVE BACKGROUND REP D	TISSUE	NEW HAVEN, CT	10/04/17 16:20	10/05/17
L1735250-05	NV NATIVE BACKGROUND REP E	TISSUE	NEW HAVEN, CT	10/04/17 16:20	10/05/17
L1735250-06	NV LABORATORY CONTROL REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-07	NV LABORATORY CONTROL REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-08	NV LABORATORY CONTROL REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-09	NV LABORATORY CONTROL REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-10	NV LABORATORY CONTROL REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-11	NV CLDS REFERENCE SEDIMENT REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-12	NV CLDS REFERENCE SEDIMENT REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-13	NV CLDS REFERENCE SEDIMENT REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-14	NV CLDS REFERENCE SEDIMENT REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-15	NV CLDS REFERENCE SEDIMENT REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-16	NV COMPOSITE 1 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-17	NV COMPOSITE 1 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-18	NV COMPOSITE 1 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735250-19	NV COMPOSITE 1 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-20	NV COMPOSITE 1 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-21	NV COMPOSITE 2 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-22	NV COMPOSITE 2 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-23	NV COMPOSITE 2 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-24	NV COMPOSITE 2 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-25	NV COMPOSITE 2 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-26	NV COMPOSITE 3 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-27	NV COMPOSITE 3 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-28	NV COMPOSITE 3 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-29	NV COMPOSITE 3 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-30	NV COMPOSITE 3 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-31	NV COMPOSITE 4 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-32	NV COMPOSITE 4 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-33	NV COMPOSITE 4 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-34	NV COMPOSITE 4 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-35	NV COMPOSITE 4 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-36	NV COMPOSITE 5 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-37	NV COMPOSITE 5 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-38	NV COMPOSITE 5 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-39	NV COMPOSITE 5 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-40	NV COMPOSITE 5 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-41	NV COMPOSITE 6 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-42	NV COMPOSITE 6 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-43	NV COMPOSITE 6 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-44	NV COMPOSITE 6 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-45	NV COMPOSITE 6 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-46	NV COMPOSITE 7 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1735250-47	NV COMPOSITE 7 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-48	NV COMPOSITE 7 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-49	NV COMPOSITE 7 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-50	NV COMPOSITE 7 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-51	NV COMPOSITE 8 REP A	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-52	NV COMPOSITE 8 REP B	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-53	NV COMPOSITE 8 REP C	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-54	NV COMPOSITE 8 REP D	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17
L1735250-55	NV COMPOSITE 8 REP E	TISSUE	NEW HAVEN, CT	09/29/17 16:00	10/02/17

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L1735250: Tissue samples were frozen upon receipt in order to arrest the holding time.

Semivolatile Organics

PCB samples L1735250-21 through -55 have elevated detection limits due to the dilution required due to matrix interferences.

The WG1057021-1 Method Blank, associated with L1735250-21 through -40, has concentrations above the reporting limits for Cl3-BZ#18. Since the sample(s) were non-detect to the RL for these target analytes, no further actions were taken. The results of the original analysis are reported.

The WG1057014-6/-7 MS/MSD recoveries, performed on L1735250-01, are outside the acceptance criteria for Cl3-MZ#18 (167%/144%) and Cl4-BZ#49 (50%/50%).

The WG1057021-6/-7 MS/MSD recoveries/RPDs, performed on L1735250-21, are outside the acceptance criteria for several compounds. See the enclosed MS/MSD recovery and QC summary form for sepcific details.

The WG1057028-6/-7 MS/MSD recoveries, performed on L1735250-41, are outside the acceptance criteria for Naphthalene (50%-MS only), Acenaphthene (50%-MS only), Anthracene (49%-MS only), Chrysene (50%-MS only), Benzo(k)fluoranthene (49%-MS only), Cl2-BZ#8 (50%-MS only), Cl4-BZ#49 (46%/49%) and Cl7-BZ#183 (46%-MS only).

Pesticides

L1735250-38: The surrogate recovery is outside the acceptance criteria for DBOB (175%); however, the

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Case Narrative (continued)

sample was not re-extracted due to obvious matrix interference.

L1735250-42: The surrogate recovery is outside the acceptance criteria for BZ198 (191%); however, the sample was not re-extracted due to obvious matrix interference.

The WG1057025-2/-3 LCS/LCSD recoveries, associated with L1735250-41 through -55, are outside the acceptance criteria for individual target compounds, but within the overall method allowances. The results of the associated samples are reported; however, all results are considered to have a potential bias for Hexachlorobenzene (40%/43%), gamma-BHC (40%/45%), Heptachlor (41%/44%), Aldrin (40%/43%), trans-Chlordane (48%-LCS only), Endosulfan I (48%-LCS only), cis-Chlordane (48%/49%). All recoveries for the LCS/LCSD, WG1057025-2/-3, are within SOP criteria (40-140%); therefore no further action was taken.

The WG1057016-6/-7 MS/MSD recoveries, performed on sample L1735250-21, are outside the acceptance criteria for several compounds; however, the associated LCS/LCSD are within overall method allowances.

The WG1057025-6/-7 MS/MSD recoveries, performed on L1735250-41, are within SOP criteria (40-140%); therefore no further action was taken. The WG1057025-7 MSD surrogate recovery is outside the acceptance criteria for BZ 198 (206%); however, the sample was not re-extracted due to obvious matrix interference.

The Duplicate WG1057025-5, surrogate DBOB (23% B channel), performed on L1735250-41, is below the acceptable criteria. However, all other surrogate recoveries are within overall method allowances therefore no further action was taken.

The WG1057025-4 SRM recovery for cis-Chlordane (32%) is below the acceptable criteria.

Total Metals

The WG1056489-5 Laboratory Duplicate RPD for Arsenic (142%), Copper (142%) and Zinc (141%), performed on L1735250-53, is outside the acceptance criteria. The elevated RPD has been attributed to the non-

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Case Narrative (continued)

homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 11/20/17

ORGANICS

SEMIVOLATILES

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-01
 Client ID: NV NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 17:56
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	5.46	J	ug/kg	9.31	4.66	1
Acenaphthylene	ND		ug/kg	9.31	4.66	1
Acenaphthene	ND		ug/kg	9.31	4.66	1
Fluorene	ND		ug/kg	9.31	4.66	1
Phenanthrene	7.86	J	ug/kg	9.31	4.66	1
Anthracene	ND		ug/kg	9.31	4.66	1
Fluoranthene	ND		ug/kg	9.31	4.66	1
Pyrene	ND		ug/kg	9.31	4.66	1
Benz(a)anthracene	ND		ug/kg	9.31	4.66	1
Chrysene	ND		ug/kg	9.31	4.66	1
Benzo(b)fluoranthene	ND		ug/kg	9.31	4.66	1
Benzo(k)fluoranthene	ND		ug/kg	9.31	4.66	1
Benzo(a)pyrene	ND		ug/kg	9.31	4.66	1
Indeno(1,2,3-cd)Pyrene	8.89	J	ug/kg	9.31	4.66	1
Dibenz(a,h)anthracene	ND		ug/kg	9.31	4.66	1
Benzo(ghi)perylene	ND		ug/kg	9.31	4.66	1
Cl2-BZ#8	ND		ug/kg	0.931	0.466	1
Cl3-BZ#18	ND		ug/kg	0.931	0.466	1
Cl3-BZ#28	ND		ug/kg	0.931	0.466	1
Cl4-BZ#44	ND		ug/kg	0.931	0.466	1
Cl4-BZ#49	ND		ug/kg	0.931	0.466	1
Cl4-BZ#52	ND		ug/kg	0.931	0.466	1
Cl4-BZ#66	ND		ug/kg	0.931	0.466	1
Cl5-BZ#87	ND		ug/kg	0.931	0.466	1
Cl5-BZ#101	0.812	J	ug/kg	0.931	0.466	1
Cl5-BZ#105	ND		ug/kg	0.931	0.466	1
Cl5-BZ#118	0.506	J	ug/kg	0.931	0.466	1
Cl6-BZ#128	ND		ug/kg	0.931	0.466	1
Cl6-BZ#138	0.585	J	ug/kg	0.931	0.466	1
Cl6-BZ#153	0.812	J	ug/kg	0.931	0.466	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-01

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP A

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.931	0.466	1
Cl7-BZ#180	ND		ug/kg	0.931	0.466	1
Cl7-BZ#183	ND		ug/kg	0.931	0.466	1
Cl7-BZ#184	ND		ug/kg	0.931	0.466	1
Cl7-BZ#187	ND		ug/kg	0.931	0.466	1
Cl8-BZ#195	ND		ug/kg	0.931	0.466	1
Cl9-BZ#206	ND		ug/kg	0.931	0.466	1
Cl10-BZ#209	ND		ug/kg	0.931	0.466	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	50		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	54		30-150
BZ 198	49		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-02
 Client ID: NV NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 21:00
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	6.34	J	ug/kg	9.96	4.98	1
Acenaphthylene	ND		ug/kg	9.96	4.98	1
Acenaphthene	ND		ug/kg	9.96	4.98	1
Fluorene	ND		ug/kg	9.96	4.98	1
Phenanthrene	ND		ug/kg	9.96	4.98	1
Anthracene	ND		ug/kg	9.96	4.98	1
Fluoranthene	ND		ug/kg	9.96	4.98	1
Pyrene	ND		ug/kg	9.96	4.98	1
Benz(a)anthracene	ND		ug/kg	9.96	4.98	1
Chrysene	ND		ug/kg	9.96	4.98	1
Benzo(b)fluoranthene	ND		ug/kg	9.96	4.98	1
Benzo(k)fluoranthene	ND		ug/kg	9.96	4.98	1
Benzo(a)pyrene	ND		ug/kg	9.96	4.98	1
Indeno(1,2,3-cd)Pyrene	9.42	J	ug/kg	9.96	4.98	1
Dibenz(a,h)anthracene	ND		ug/kg	9.96	4.98	1
Benzo(ghi)perylene	ND		ug/kg	9.96	4.98	1
Cl2-BZ#8	ND		ug/kg	0.996	0.498	1
Cl3-BZ#18	ND		ug/kg	0.996	0.498	1
Cl3-BZ#28	ND		ug/kg	0.996	0.498	1
Cl4-BZ#44	ND		ug/kg	0.996	0.498	1
Cl4-BZ#49	ND		ug/kg	0.996	0.498	1
Cl4-BZ#52	ND		ug/kg	0.996	0.498	1
Cl4-BZ#66	ND		ug/kg	0.996	0.498	1
Cl5-BZ#87	ND		ug/kg	0.996	0.498	1
Cl5-BZ#101	ND		ug/kg	0.996	0.498	1
Cl5-BZ#105	ND		ug/kg	0.996	0.498	1
Cl5-BZ#118	0.633	J	ug/kg	0.996	0.498	1
Cl6-BZ#128	ND		ug/kg	0.996	0.498	1
Cl6-BZ#138	ND		ug/kg	0.996	0.498	1
Cl6-BZ#153	0.754	J	ug/kg	0.996	0.498	1



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-02**Date Collected:** 10/04/17 16:20**Client ID:** NV NATIVE BACKGROUND REP B**Date Received:** 10/05/17**Sample Location:** NEW HAVEN, CT**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.996	0.498	1
Cl7-BZ#180	ND		ug/kg	0.996	0.498	1
Cl7-BZ#183	ND		ug/kg	0.996	0.498	1
Cl7-BZ#184	ND		ug/kg	0.996	0.498	1
Cl7-BZ#187	ND		ug/kg	0.996	0.498	1
Cl8-BZ#195	ND		ug/kg	0.996	0.498	1
Cl9-BZ#206	ND		ug/kg	0.996	0.498	1
Cl10-BZ#209	ND		ug/kg	0.996	0.498	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	54		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	65		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-03
 Client ID: NV NATIVE BACKGROUND REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 21:32
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	6.49	J	ug/kg	8.83	4.42	1
Acenaphthylene	ND		ug/kg	8.83	4.42	1
Acenaphthene	4.78	J	ug/kg	8.83	4.42	1
Fluorene	ND		ug/kg	8.83	4.42	1
Phenanthrene	ND		ug/kg	8.83	4.42	1
Anthracene	ND		ug/kg	8.83	4.42	1
Fluoranthene	ND		ug/kg	8.83	4.42	1
Pyrene	ND		ug/kg	8.83	4.42	1
Benz(a)anthracene	ND		ug/kg	8.83	4.42	1
Chrysene	ND		ug/kg	8.83	4.42	1
Benzo(b)fluoranthene	ND		ug/kg	8.83	4.42	1
Benzo(k)fluoranthene	ND		ug/kg	8.83	4.42	1
Benzo(a)pyrene	ND		ug/kg	8.83	4.42	1
Indeno(1,2,3-cd)Pyrene	8.12	J	ug/kg	8.83	4.42	1
Dibenz(a,h)anthracene	ND		ug/kg	8.83	4.42	1
Benzo(ghi)perylene	ND		ug/kg	8.83	4.42	1
Cl2-BZ#8	ND		ug/kg	0.883	0.442	1
Cl3-BZ#18	ND		ug/kg	0.883	0.442	1
Cl3-BZ#28	ND		ug/kg	0.883	0.442	1
Cl4-BZ#44	ND		ug/kg	0.883	0.442	1
Cl4-BZ#49	ND		ug/kg	0.883	0.442	1
Cl4-BZ#52	ND		ug/kg	0.883	0.442	1
Cl4-BZ#66	ND		ug/kg	0.883	0.442	1
Cl5-BZ#87	ND		ug/kg	0.883	0.442	1
Cl5-BZ#101	ND		ug/kg	0.883	0.442	1
Cl5-BZ#105	ND		ug/kg	0.883	0.442	1
Cl5-BZ#118	0.746	J	ug/kg	0.883	0.442	1
Cl6-BZ#128	ND		ug/kg	0.883	0.442	1
Cl6-BZ#138	0.699	J	ug/kg	0.883	0.442	1
Cl6-BZ#153	1.15		ug/kg	0.883	0.442	1

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-03

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP C

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.883	0.442	1
Cl7-BZ#180	ND		ug/kg	0.883	0.442	1
Cl7-BZ#183	ND		ug/kg	0.883	0.442	1
Cl7-BZ#184	ND		ug/kg	0.883	0.442	1
Cl7-BZ#187	ND		ug/kg	0.883	0.442	1
Cl8-BZ#195	ND		ug/kg	0.883	0.442	1
Cl9-BZ#206	ND		ug/kg	0.883	0.442	1
Cl10-BZ#209	ND		ug/kg	0.883	0.442	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	68		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-04
 Client ID: NV NATIVE BACKGROUND REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 22:05
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	6.21	J	ug/kg	8.74	4.37	1
Acenaphthylene	ND		ug/kg	8.74	4.37	1
Acenaphthene	ND		ug/kg	8.74	4.37	1
Fluorene	ND		ug/kg	8.74	4.37	1
Phenanthrene	ND		ug/kg	8.74	4.37	1
Anthracene	ND		ug/kg	8.74	4.37	1
Fluoranthene	ND		ug/kg	8.74	4.37	1
Pyrene	ND		ug/kg	8.74	4.37	1
Benz(a)anthracene	ND		ug/kg	8.74	4.37	1
Chrysene	ND		ug/kg	8.74	4.37	1
Benzo(b)fluoranthene	ND		ug/kg	8.74	4.37	1
Benzo(k)fluoranthene	ND		ug/kg	8.74	4.37	1
Benzo(a)pyrene	ND		ug/kg	8.74	4.37	1
Indeno(1,2,3-cd)Pyrene	7.76	J	ug/kg	8.74	4.37	1
Dibenz(a,h)anthracene	ND		ug/kg	8.74	4.37	1
Benzo(ghi)perylene	ND		ug/kg	8.74	4.37	1
Cl2-BZ#8	ND		ug/kg	0.874	0.437	1
Cl3-BZ#18	ND		ug/kg	0.874	0.437	1
Cl3-BZ#28	ND		ug/kg	0.874	0.437	1
Cl4-BZ#44	ND		ug/kg	0.874	0.437	1
Cl4-BZ#49	ND		ug/kg	0.874	0.437	1
Cl4-BZ#52	ND		ug/kg	0.874	0.437	1
Cl4-BZ#66	ND		ug/kg	0.874	0.437	1
Cl5-BZ#87	ND		ug/kg	0.874	0.437	1
Cl5-BZ#101	ND		ug/kg	0.874	0.437	1
Cl5-BZ#105	ND		ug/kg	0.874	0.437	1
Cl5-BZ#118	1.10		ug/kg	0.874	0.437	1
Cl6-BZ#128	ND		ug/kg	0.874	0.437	1
Cl6-BZ#138	0.523	J	ug/kg	0.874	0.437	1
Cl6-BZ#153	0.947		ug/kg	0.874	0.437	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-04

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP D

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.874	0.437	1
Cl7-BZ#180	ND		ug/kg	0.874	0.437	1
Cl7-BZ#183	ND		ug/kg	0.874	0.437	1
Cl7-BZ#184	ND		ug/kg	0.874	0.437	1
Cl7-BZ#187	ND		ug/kg	0.874	0.437	1
Cl8-BZ#195	ND		ug/kg	0.874	0.437	1
Cl9-BZ#206	ND		ug/kg	0.874	0.437	1
Cl10-BZ#209	ND		ug/kg	0.874	0.437	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	52		30-150
DBOB	71		30-150
BZ 198	69		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-05
 Client ID: NV NATIVE BACKGROUND REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 22:37
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	6.60	J	ug/kg	9.78	4.89	1
Acenaphthylene	ND		ug/kg	9.78	4.89	1
Acenaphthene	ND		ug/kg	9.78	4.89	1
Fluorene	ND		ug/kg	9.78	4.89	1
Phenanthrene	ND		ug/kg	9.78	4.89	1
Anthracene	ND		ug/kg	9.78	4.89	1
Fluoranthene	ND		ug/kg	9.78	4.89	1
Pyrene	ND		ug/kg	9.78	4.89	1
Benz(a)anthracene	ND		ug/kg	9.78	4.89	1
Chrysene	ND		ug/kg	9.78	4.89	1
Benzo(b)fluoranthene	ND		ug/kg	9.78	4.89	1
Benzo(k)fluoranthene	ND		ug/kg	9.78	4.89	1
Benzo(a)pyrene	ND		ug/kg	9.78	4.89	1
Indeno(1,2,3-cd)Pyrene	8.86	J	ug/kg	9.78	4.89	1
Dibenz(a,h)anthracene	ND		ug/kg	9.78	4.89	1
Benzo(ghi)perylene	ND		ug/kg	9.78	4.89	1
Cl2-BZ#8	ND		ug/kg	0.978	0.489	1
Cl3-BZ#18	ND		ug/kg	0.978	0.489	1
Cl3-BZ#28	ND		ug/kg	0.978	0.489	1
Cl4-BZ#44	ND		ug/kg	0.978	0.489	1
Cl4-BZ#49	ND		ug/kg	0.978	0.489	1
Cl4-BZ#52	ND		ug/kg	0.978	0.489	1
Cl4-BZ#66	ND		ug/kg	0.978	0.489	1
Cl5-BZ#87	ND		ug/kg	0.978	0.489	1
Cl5-BZ#101	ND		ug/kg	0.978	0.489	1
Cl5-BZ#105	ND		ug/kg	0.978	0.489	1
Cl5-BZ#118	0.850	J	ug/kg	0.978	0.489	1
Cl6-BZ#128	ND		ug/kg	0.978	0.489	1
Cl6-BZ#138	0.512	J	ug/kg	0.978	0.489	1
Cl6-BZ#153	0.626	J	ug/kg	0.978	0.489	1



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-05**Date Collected:** 10/04/17 16:20**Client ID:** NV NATIVE BACKGROUND REP E**Date Received:** 10/05/17**Sample Location:** NEW HAVEN, CT**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.978	0.489	1
Cl7-BZ#180	ND		ug/kg	0.978	0.489	1
Cl7-BZ#183	ND		ug/kg	0.978	0.489	1
Cl7-BZ#184	ND		ug/kg	0.978	0.489	1
Cl7-BZ#187	ND		ug/kg	0.978	0.489	1
Cl8-BZ#195	ND		ug/kg	0.978	0.489	1
Cl9-BZ#206	ND		ug/kg	0.978	0.489	1
Cl10-BZ#209	ND		ug/kg	0.978	0.489	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	63		30-150
Pyrene-d10	66		30-150
Benzo(b)fluoranthene-d12	62		30-150
DBOB	72		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-06
 Client ID: NV LABORATORY CONTROL REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 23:10
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.47	4.73	1
Acenaphthylene	ND		ug/kg	9.47	4.73	1
Acenaphthene	ND		ug/kg	9.47	4.73	1
Fluorene	ND		ug/kg	9.47	4.73	1
Phenanthrene	ND		ug/kg	9.47	4.73	1
Anthracene	ND		ug/kg	9.47	4.73	1
Fluoranthene	ND		ug/kg	9.47	4.73	1
Pyrene	ND		ug/kg	9.47	4.73	1
Benz(a)anthracene	ND		ug/kg	9.47	4.73	1
Chrysene	ND		ug/kg	9.47	4.73	1
Benzo(b)fluoranthene	ND		ug/kg	9.47	4.73	1
Benzo(k)fluoranthene	ND		ug/kg	9.47	4.73	1
Benzo(a)pyrene	ND		ug/kg	9.47	4.73	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.47	4.73	1
Dibenz(a,h)anthracene	ND		ug/kg	9.47	4.73	1
Benzo(ghi)perylene	ND		ug/kg	9.47	4.73	1
Cl2-BZ#8	ND		ug/kg	0.947	0.473	1
Cl3-BZ#18	ND		ug/kg	0.947	0.473	1
Cl3-BZ#28	ND		ug/kg	0.947	0.473	1
Cl4-BZ#44	ND		ug/kg	0.947	0.473	1
Cl4-BZ#49	ND		ug/kg	0.947	0.473	1
Cl4-BZ#52	ND		ug/kg	0.947	0.473	1
Cl4-BZ#66	ND		ug/kg	0.947	0.473	1
Cl5-BZ#87	ND		ug/kg	0.947	0.473	1
Cl5-BZ#101	ND		ug/kg	0.947	0.473	1
Cl5-BZ#105	ND		ug/kg	0.947	0.473	1
Cl5-BZ#118	0.545	J	ug/kg	0.947	0.473	1
Cl6-BZ#128	ND		ug/kg	0.947	0.473	1
Cl6-BZ#138	0.710	J	ug/kg	0.947	0.473	1
Cl6-BZ#153	1.02		ug/kg	0.947	0.473	1

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-06

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.947	0.473	1
Cl7-BZ#180	ND		ug/kg	0.947	0.473	1
Cl7-BZ#183	ND		ug/kg	0.947	0.473	1
Cl7-BZ#184	ND		ug/kg	0.947	0.473	1
Cl7-BZ#187	ND		ug/kg	0.947	0.473	1
Cl8-BZ#195	ND		ug/kg	0.947	0.473	1
Cl9-BZ#206	ND		ug/kg	0.947	0.473	1
Cl10-BZ#209	ND		ug/kg	0.947	0.473	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	58		30-150
Benzo(b)fluoranthene-d12	56		30-150
DBOB	67		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-07
 Client ID: NV LABORATORY CONTROL REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/08/17 23:42
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.17	4.59	1
Acenaphthylene	ND		ug/kg	9.17	4.59	1
Acenaphthene	ND		ug/kg	9.17	4.59	1
Fluorene	ND		ug/kg	9.17	4.59	1
Phenanthrene	ND		ug/kg	9.17	4.59	1
Anthracene	ND		ug/kg	9.17	4.59	1
Fluoranthene	ND		ug/kg	9.17	4.59	1
Pyrene	ND		ug/kg	9.17	4.59	1
Benz(a)anthracene	ND		ug/kg	9.17	4.59	1
Chrysene	ND		ug/kg	9.17	4.59	1
Benzo(b)fluoranthene	ND		ug/kg	9.17	4.59	1
Benzo(k)fluoranthene	ND		ug/kg	9.17	4.59	1
Benzo(a)pyrene	ND		ug/kg	9.17	4.59	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.17	4.59	1
Dibenz(a,h)anthracene	ND		ug/kg	9.17	4.59	1
Benzo(ghi)perylene	ND		ug/kg	9.17	4.59	1
Cl2-BZ#8	ND		ug/kg	0.917	0.459	1
Cl3-BZ#18	ND		ug/kg	0.917	0.459	1
Cl3-BZ#28	ND		ug/kg	0.917	0.459	1
Cl4-BZ#44	ND		ug/kg	0.917	0.459	1
Cl4-BZ#49	ND		ug/kg	0.917	0.459	1
Cl4-BZ#52	ND		ug/kg	0.917	0.459	1
Cl4-BZ#66	ND		ug/kg	0.917	0.459	1
Cl5-BZ#87	ND		ug/kg	0.917	0.459	1
Cl5-BZ#101	0.984		ug/kg	0.917	0.459	1
Cl5-BZ#105	ND		ug/kg	0.917	0.459	1
Cl5-BZ#118	ND		ug/kg	0.917	0.459	1
Cl6-BZ#128	ND		ug/kg	0.917	0.459	1
Cl6-BZ#138	1.11		ug/kg	0.917	0.459	1
Cl6-BZ#153	1.94		ug/kg	0.917	0.459	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-07

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.917	0.459	1
Cl7-BZ#180	0.828	J	ug/kg	0.917	0.459	1
Cl7-BZ#183	ND		ug/kg	0.917	0.459	1
Cl7-BZ#184	ND		ug/kg	0.917	0.459	1
Cl7-BZ#187	0.804	J	ug/kg	0.917	0.459	1
Cl8-BZ#195	ND		ug/kg	0.917	0.459	1
Cl9-BZ#206	ND		ug/kg	0.917	0.459	1
Cl10-BZ#209	ND		ug/kg	0.917	0.459	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	61		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	70		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-08
 Client ID: NV LABORATORY CONTROL REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 00:14
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.07	4.54	1
Acenaphthylene	ND		ug/kg	9.07	4.54	1
Acenaphthene	ND		ug/kg	9.07	4.54	1
Fluorene	ND		ug/kg	9.07	4.54	1
Phenanthrene	4.86	J	ug/kg	9.07	4.54	1
Anthracene	ND		ug/kg	9.07	4.54	1
Fluoranthene	ND		ug/kg	9.07	4.54	1
Pyrene	ND		ug/kg	9.07	4.54	1
Benz(a)anthracene	ND		ug/kg	9.07	4.54	1
Chrysene	ND		ug/kg	9.07	4.54	1
Benzo(b)fluoranthene	ND		ug/kg	9.07	4.54	1
Benzo(k)fluoranthene	ND		ug/kg	9.07	4.54	1
Benzo(a)pyrene	ND		ug/kg	9.07	4.54	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.07	4.54	1
Dibenz(a,h)anthracene	ND		ug/kg	9.07	4.54	1
Benzo(ghi)perylene	ND		ug/kg	9.07	4.54	1
Cl2-BZ#8	ND		ug/kg	0.907	0.454	1
Cl3-BZ#18	ND		ug/kg	0.907	0.454	1
Cl3-BZ#28	ND		ug/kg	0.907	0.454	1
Cl4-BZ#44	ND		ug/kg	0.907	0.454	1
Cl4-BZ#49	ND		ug/kg	0.907	0.454	1
Cl4-BZ#52	ND		ug/kg	0.907	0.454	1
Cl4-BZ#66	ND		ug/kg	0.907	0.454	1
Cl5-BZ#87	ND		ug/kg	0.907	0.454	1
Cl5-BZ#101	ND		ug/kg	0.907	0.454	1
Cl5-BZ#105	ND		ug/kg	0.907	0.454	1
Cl5-BZ#118	ND		ug/kg	0.907	0.454	1
Cl6-BZ#128	ND		ug/kg	0.907	0.454	1
Cl6-BZ#138	0.532	J	ug/kg	0.907	0.454	1
Cl6-BZ#153	0.581	J	ug/kg	0.907	0.454	1

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-08

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.907	0.454	1
Cl7-BZ#180	ND		ug/kg	0.907	0.454	1
Cl7-BZ#183	ND		ug/kg	0.907	0.454	1
Cl7-BZ#184	ND		ug/kg	0.907	0.454	1
Cl7-BZ#187	ND		ug/kg	0.907	0.454	1
Cl8-BZ#195	ND		ug/kg	0.907	0.454	1
Cl9-BZ#206	ND		ug/kg	0.907	0.454	1
Cl10-BZ#209	ND		ug/kg	0.907	0.454	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	61		30-150
DBOB	70		30-150
BZ 198	65		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-09
 Client ID: NV LABORATORY CONTROL REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 00:47
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	8.93	4.46	1
Acenaphthylene	ND		ug/kg	8.93	4.46	1
Acenaphthene	ND		ug/kg	8.93	4.46	1
Fluorene	ND		ug/kg	8.93	4.46	1
Phenanthrene	ND		ug/kg	8.93	4.46	1
Anthracene	ND		ug/kg	8.93	4.46	1
Fluoranthene	ND		ug/kg	8.93	4.46	1
Pyrene	ND		ug/kg	8.93	4.46	1
Benz(a)anthracene	ND		ug/kg	8.93	4.46	1
Chrysene	ND		ug/kg	8.93	4.46	1
Benzo(b)fluoranthene	ND		ug/kg	8.93	4.46	1
Benzo(k)fluoranthene	ND		ug/kg	8.93	4.46	1
Benzo(a)pyrene	ND		ug/kg	8.93	4.46	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	8.93	4.46	1
Dibenz(a,h)anthracene	ND		ug/kg	8.93	4.46	1
Benzo(ghi)perylene	ND		ug/kg	8.93	4.46	1
Cl2-BZ#8	ND		ug/kg	0.893	0.446	1
Cl3-BZ#18	ND		ug/kg	0.893	0.446	1
Cl3-BZ#28	ND		ug/kg	0.893	0.446	1
Cl4-BZ#44	ND		ug/kg	0.893	0.446	1
Cl4-BZ#49	ND		ug/kg	0.893	0.446	1
Cl4-BZ#52	ND		ug/kg	0.893	0.446	1
Cl4-BZ#66	ND		ug/kg	0.893	0.446	1
Cl5-BZ#87	ND		ug/kg	0.893	0.446	1
Cl5-BZ#101	ND		ug/kg	0.893	0.446	1
Cl5-BZ#105	ND		ug/kg	0.893	0.446	1
Cl5-BZ#118	ND		ug/kg	0.893	0.446	1
Cl6-BZ#128	ND		ug/kg	0.893	0.446	1
Cl6-BZ#138	0.755	J	ug/kg	0.893	0.446	1
Cl6-BZ#153	1.05		ug/kg	0.893	0.446	1



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-09**Date Collected:** 09/29/17 16:00**Client ID:** NV LABORATORY CONTROL REP D**Date Received:** 10/02/17**Sample Location:** NEW HAVEN, CT**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.893	0.446	1
Cl7-BZ#180	ND		ug/kg	0.893	0.446	1
Cl7-BZ#183	ND		ug/kg	0.893	0.446	1
Cl7-BZ#184	ND		ug/kg	0.893	0.446	1
Cl7-BZ#187	ND		ug/kg	0.893	0.446	1
Cl8-BZ#195	ND		ug/kg	0.893	0.446	1
Cl9-BZ#206	ND		ug/kg	0.893	0.446	1
Cl10-BZ#209	ND		ug/kg	0.893	0.446	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	64		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	66		30-150
DBOB	75		30-150
BZ 198	71		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-10
 Client ID: NV LABORATORY CONTROL REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 01:19
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	8.96	4.48	1
Acenaphthylene	ND		ug/kg	8.96	4.48	1
Acenaphthene	ND		ug/kg	8.96	4.48	1
Fluorene	ND		ug/kg	8.96	4.48	1
Phenanthrene	ND		ug/kg	8.96	4.48	1
Anthracene	ND		ug/kg	8.96	4.48	1
Fluoranthene	ND		ug/kg	8.96	4.48	1
Pyrene	ND		ug/kg	8.96	4.48	1
Benz(a)anthracene	ND		ug/kg	8.96	4.48	1
Chrysene	ND		ug/kg	8.96	4.48	1
Benzo(b)fluoranthene	ND		ug/kg	8.96	4.48	1
Benzo(k)fluoranthene	ND		ug/kg	8.96	4.48	1
Benzo(a)pyrene	ND		ug/kg	8.96	4.48	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	8.96	4.48	1
Dibenz(a,h)anthracene	ND		ug/kg	8.96	4.48	1
Benzo(ghi)perylene	ND		ug/kg	8.96	4.48	1
Cl2-BZ#8	ND		ug/kg	0.896	0.448	1
Cl3-BZ#18	ND		ug/kg	0.896	0.448	1
Cl3-BZ#28	ND		ug/kg	0.896	0.448	1
Cl4-BZ#44	ND		ug/kg	0.896	0.448	1
Cl4-BZ#49	ND		ug/kg	0.896	0.448	1
Cl4-BZ#52	ND		ug/kg	0.896	0.448	1
Cl4-BZ#66	ND		ug/kg	0.896	0.448	1
Cl5-BZ#87	ND		ug/kg	0.896	0.448	1
Cl5-BZ#101	ND		ug/kg	0.896	0.448	1
Cl5-BZ#105	ND		ug/kg	0.896	0.448	1
Cl5-BZ#118	ND		ug/kg	0.896	0.448	1
Cl6-BZ#128	ND		ug/kg	0.896	0.448	1
Cl6-BZ#138	0.572	J	ug/kg	0.896	0.448	1
Cl6-BZ#153	ND		ug/kg	0.896	0.448	1



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-10**Date Collected:** 09/29/17 16:00**Client ID:** NV LABORATORY CONTROL REP E**Date Received:** 10/02/17**Sample Location:** NEW HAVEN, CT**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.896	0.448	1
Cl7-BZ#180	ND		ug/kg	0.896	0.448	1
Cl7-BZ#183	ND		ug/kg	0.896	0.448	1
Cl7-BZ#184	ND		ug/kg	0.896	0.448	1
Cl7-BZ#187	ND		ug/kg	0.896	0.448	1
Cl8-BZ#195	ND		ug/kg	0.896	0.448	1
Cl9-BZ#206	ND		ug/kg	0.896	0.448	1
Cl10-BZ#209	ND		ug/kg	0.896	0.448	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	63		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	64		30-150
DBOB	72		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-11
 Client ID: NV CLDS REFERENCE SEDIMENT REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 12:30

Analytical Date: 11/09/17 01:51

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	5.12	J	ug/kg	8.77	4.38	1
Acenaphthylene	ND		ug/kg	8.77	4.38	1
Acenaphthene	7.31	J	ug/kg	8.77	4.38	1
Fluorene	ND		ug/kg	8.77	4.38	1
Phenanthrene	ND		ug/kg	8.77	4.38	1
Anthracene	ND		ug/kg	8.77	4.38	1
Fluoranthene	ND		ug/kg	8.77	4.38	1
Pyrene	ND		ug/kg	8.77	4.38	1
Benz(a)anthracene	ND		ug/kg	8.77	4.38	1
Chrysene	ND		ug/kg	8.77	4.38	1
Benzo(b)fluoranthene	ND		ug/kg	8.77	4.38	1
Benzo(k)fluoranthene	ND		ug/kg	8.77	4.38	1
Benzo(a)pyrene	ND		ug/kg	8.77	4.38	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	8.77	4.38	1
Dibenz(a,h)anthracene	ND		ug/kg	8.77	4.38	1
Benzo(ghi)perylene	ND		ug/kg	8.77	4.38	1
Cl2-BZ#8	ND		ug/kg	0.877	0.438	1
Cl3-BZ#18	ND		ug/kg	0.877	0.438	1
Cl3-BZ#28	ND		ug/kg	0.877	0.438	1
Cl4-BZ#44	ND		ug/kg	0.877	0.438	1
Cl4-BZ#49	ND		ug/kg	0.877	0.438	1
Cl4-BZ#52	ND		ug/kg	0.877	0.438	1
Cl4-BZ#66	ND		ug/kg	0.877	0.438	1
Cl5-BZ#87	ND		ug/kg	0.877	0.438	1
Cl5-BZ#101	ND		ug/kg	0.877	0.438	1
Cl5-BZ#105	ND		ug/kg	0.877	0.438	1
Cl5-BZ#118	ND		ug/kg	0.877	0.438	1
Cl6-BZ#128	ND		ug/kg	0.877	0.438	1
Cl6-BZ#138	ND		ug/kg	0.877	0.438	1
Cl6-BZ#153	0.534	J	ug/kg	0.877	0.438	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-11

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.877	0.438	1
Cl7-BZ#180	ND		ug/kg	0.877	0.438	1
Cl7-BZ#183	ND		ug/kg	0.877	0.438	1
Cl7-BZ#184	ND		ug/kg	0.877	0.438	1
Cl7-BZ#187	ND		ug/kg	0.877	0.438	1
Cl8-BZ#195	ND		ug/kg	0.877	0.438	1
Cl9-BZ#206	ND		ug/kg	0.877	0.438	1
Cl10-BZ#209	ND		ug/kg	0.877	0.438	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	51		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	52		30-150
DBOB	57		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-12
 Client ID: NV CLDS REFERENCE SEDIMENT REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 02:23
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.31	4.66	1
Acenaphthylene	ND		ug/kg	9.31	4.66	1
Acenaphthene	ND		ug/kg	9.31	4.66	1
Fluorene	ND		ug/kg	9.31	4.66	1
Phenanthrene	ND		ug/kg	9.31	4.66	1
Anthracene	ND		ug/kg	9.31	4.66	1
Fluoranthene	ND		ug/kg	9.31	4.66	1
Pyrene	ND		ug/kg	9.31	4.66	1
Benz(a)anthracene	ND		ug/kg	9.31	4.66	1
Chrysene	ND		ug/kg	9.31	4.66	1
Benzo(b)fluoranthene	ND		ug/kg	9.31	4.66	1
Benzo(k)fluoranthene	ND		ug/kg	9.31	4.66	1
Benzo(a)pyrene	ND		ug/kg	9.31	4.66	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.31	4.66	1
Dibenz(a,h)anthracene	ND		ug/kg	9.31	4.66	1
Benzo(ghi)perylene	ND		ug/kg	9.31	4.66	1
Cl2-BZ#8	ND		ug/kg	0.931	0.466	1
Cl3-BZ#18	ND		ug/kg	0.931	0.466	1
Cl3-BZ#28	ND		ug/kg	0.931	0.466	1
Cl4-BZ#44	ND		ug/kg	0.931	0.466	1
Cl4-BZ#49	ND		ug/kg	0.931	0.466	1
Cl4-BZ#52	ND		ug/kg	0.931	0.466	1
Cl4-BZ#66	ND		ug/kg	0.931	0.466	1
Cl5-BZ#87	ND		ug/kg	0.931	0.466	1
Cl5-BZ#101	ND		ug/kg	0.931	0.466	1
Cl5-BZ#105	ND		ug/kg	0.931	0.466	1
Cl5-BZ#118	ND		ug/kg	0.931	0.466	1
Cl6-BZ#128	ND		ug/kg	0.931	0.466	1
Cl6-BZ#138	0.499	J	ug/kg	0.931	0.466	1
Cl6-BZ#153	0.594	J	ug/kg	0.931	0.466	1

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-12
Client ID: NV CLDS REFERENCE SEDIMENT REP B
Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	0.931	0.466	1
CI7-BZ#180	ND		ug/kg	0.931	0.466	1
CI7-BZ#183	ND		ug/kg	0.931	0.466	1
CI7-BZ#184	ND		ug/kg	0.931	0.466	1
CI7-BZ#187	ND		ug/kg	0.931	0.466	1
CI8-BZ#195	ND		ug/kg	0.931	0.466	1
CI9-BZ#206	ND		ug/kg	0.931	0.466	1
CI10-BZ#209	ND		ug/kg	0.931	0.466	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	55		30-150
Pyrene-d10	56		30-150
Benzo(b)fluoranthene-d12	54		30-150
DBOB	62		30-150
BZ 198	58		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-13
 Client ID: NV CLDS REFERENCE SEDIMENT REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 02:55
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	8.88	4.44	1
Acenaphthylene	41.2		ug/kg	8.88	4.44	1
Acenaphthene	14.9		ug/kg	8.88	4.44	1
Fluorene	ND		ug/kg	8.88	4.44	1
Phenanthrene	8.38	J	ug/kg	8.88	4.44	1
Anthracene	ND		ug/kg	8.88	4.44	1
Fluoranthene	ND		ug/kg	8.88	4.44	1
Pyrene	ND		ug/kg	8.88	4.44	1
Benz(a)anthracene	ND		ug/kg	8.88	4.44	1
Chrysene	ND		ug/kg	8.88	4.44	1
Benzo(b)fluoranthene	ND		ug/kg	8.88	4.44	1
Benzo(k)fluoranthene	ND		ug/kg	8.88	4.44	1
Benzo(a)pyrene	ND		ug/kg	8.88	4.44	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	8.88	4.44	1
Dibenz(a,h)anthracene	ND		ug/kg	8.88	4.44	1
Benzo(ghi)perylene	ND		ug/kg	8.88	4.44	1
Cl2-BZ#8	ND		ug/kg	0.888	0.444	1
Cl3-BZ#18	ND		ug/kg	0.888	0.444	1
Cl3-BZ#28	ND		ug/kg	0.888	0.444	1
Cl4-BZ#44	ND		ug/kg	0.888	0.444	1
Cl4-BZ#49	ND		ug/kg	0.888	0.444	1
Cl4-BZ#52	ND		ug/kg	0.888	0.444	1
Cl4-BZ#66	ND		ug/kg	0.888	0.444	1
Cl5-BZ#87	ND		ug/kg	0.888	0.444	1
Cl5-BZ#101	ND		ug/kg	0.888	0.444	1
Cl5-BZ#105	ND		ug/kg	0.888	0.444	1
Cl5-BZ#118	ND		ug/kg	0.888	0.444	1
Cl6-BZ#128	ND		ug/kg	0.888	0.444	1
Cl6-BZ#138	0.507	J	ug/kg	0.888	0.444	1
Cl6-BZ#153	0.972		ug/kg	0.888	0.444	1

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-13
Client ID: NV CLDS REFERENCE SEDIMENT REP C
Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.888	0.444	1
Cl7-BZ#180	ND		ug/kg	0.888	0.444	1
Cl7-BZ#183	ND		ug/kg	0.888	0.444	1
Cl7-BZ#184	ND		ug/kg	0.888	0.444	1
Cl7-BZ#187	ND		ug/kg	0.888	0.444	1
Cl8-BZ#195	ND		ug/kg	0.888	0.444	1
Cl9-BZ#206	ND		ug/kg	0.888	0.444	1
Cl10-BZ#209	ND		ug/kg	0.888	0.444	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	63		30-150
DBOB	69		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-14
 Client ID: NV CLDS REFERENCE SEDIMENT REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 03:28
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.01	4.50	1
Acenaphthylene	ND		ug/kg	9.01	4.50	1
Acenaphthene	ND		ug/kg	9.01	4.50	1
Fluorene	ND		ug/kg	9.01	4.50	1
Phenanthrene	7.10	J	ug/kg	9.01	4.50	1
Anthracene	ND		ug/kg	9.01	4.50	1
Fluoranthene	ND		ug/kg	9.01	4.50	1
Pyrene	ND		ug/kg	9.01	4.50	1
Benz(a)anthracene	ND		ug/kg	9.01	4.50	1
Chrysene	ND		ug/kg	9.01	4.50	1
Benzo(b)fluoranthene	ND		ug/kg	9.01	4.50	1
Benzo(k)fluoranthene	ND		ug/kg	9.01	4.50	1
Benzo(a)pyrene	ND		ug/kg	9.01	4.50	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.01	4.50	1
Dibenz(a,h)anthracene	ND		ug/kg	9.01	4.50	1
Benzo(ghi)perylene	ND		ug/kg	9.01	4.50	1
Cl2-BZ#8	ND		ug/kg	0.901	0.450	1
Cl3-BZ#18	ND		ug/kg	0.901	0.450	1
Cl3-BZ#28	ND		ug/kg	0.901	0.450	1
Cl4-BZ#44	ND		ug/kg	0.901	0.450	1
Cl4-BZ#49	ND		ug/kg	0.901	0.450	1
Cl4-BZ#52	ND		ug/kg	0.901	0.450	1
Cl4-BZ#66	ND		ug/kg	0.901	0.450	1
Cl5-BZ#87	ND		ug/kg	0.901	0.450	1
Cl5-BZ#101	ND		ug/kg	0.901	0.450	1
Cl5-BZ#105	ND		ug/kg	0.901	0.450	1
Cl5-BZ#118	ND		ug/kg	0.901	0.450	1
Cl6-BZ#128	ND		ug/kg	0.901	0.450	1
Cl6-BZ#138	0.793	J	ug/kg	0.901	0.450	1
Cl6-BZ#153	1.12		ug/kg	0.901	0.450	1



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-14
Client ID: NV CLDS REFERENCE SEDIMENT REP D
Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.901	0.450	1
Cl7-BZ#180	ND		ug/kg	0.901	0.450	1
Cl7-BZ#183	ND		ug/kg	0.901	0.450	1
Cl7-BZ#184	ND		ug/kg	0.901	0.450	1
Cl7-BZ#187	ND		ug/kg	0.901	0.450	1
Cl8-BZ#195	ND		ug/kg	0.901	0.450	1
Cl9-BZ#206	ND		ug/kg	0.901	0.450	1
Cl10-BZ#209	ND		ug/kg	0.901	0.450	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	65		30-150
Benzo(b)fluoranthene-d12	60		30-150
DBOB	69		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-15
 Client ID: NV CLDS REFERENCE SEDIMENT REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 12:30

Analytical Date: 11/09/17 04:00

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.88	4.94	1
Acenaphthylene	ND		ug/kg	9.88	4.94	1
Acenaphthene	ND		ug/kg	9.88	4.94	1
Fluorene	ND		ug/kg	9.88	4.94	1
Phenanthrene	ND		ug/kg	9.88	4.94	1
Anthracene	ND		ug/kg	9.88	4.94	1
Fluoranthene	ND		ug/kg	9.88	4.94	1
Pyrene	ND		ug/kg	9.88	4.94	1
Benz(a)anthracene	ND		ug/kg	9.88	4.94	1
Chrysene	ND		ug/kg	9.88	4.94	1
Benzo(b)fluoranthene	ND		ug/kg	9.88	4.94	1
Benzo(k)fluoranthene	ND		ug/kg	9.88	4.94	1
Benzo(a)pyrene	ND		ug/kg	9.88	4.94	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.88	4.94	1
Dibenz(a,h)anthracene	ND		ug/kg	9.88	4.94	1
Benzo(ghi)perylene	ND		ug/kg	9.88	4.94	1
Cl2-BZ#8	ND		ug/kg	0.988	0.494	1
Cl3-BZ#18	ND		ug/kg	0.988	0.494	1
Cl3-BZ#28	ND		ug/kg	0.988	0.494	1
Cl4-BZ#44	ND		ug/kg	0.988	0.494	1
Cl4-BZ#49	ND		ug/kg	0.988	0.494	1
Cl4-BZ#52	ND		ug/kg	0.988	0.494	1
Cl4-BZ#66	ND		ug/kg	0.988	0.494	1
Cl5-BZ#87	ND		ug/kg	0.988	0.494	1
Cl5-BZ#101	ND		ug/kg	0.988	0.494	1
Cl5-BZ#105	ND		ug/kg	0.988	0.494	1
Cl5-BZ#118	ND		ug/kg	0.988	0.494	1
Cl6-BZ#128	ND		ug/kg	0.988	0.494	1
Cl6-BZ#138	0.805	J	ug/kg	0.988	0.494	1
Cl6-BZ#153	1.14		ug/kg	0.988	0.494	1

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-15

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.988	0.494	1
Cl7-BZ#180	ND		ug/kg	0.988	0.494	1
Cl7-BZ#183	ND		ug/kg	0.988	0.494	1
Cl7-BZ#184	ND		ug/kg	0.988	0.494	1
Cl7-BZ#187	ND		ug/kg	0.988	0.494	1
Cl8-BZ#195	ND		ug/kg	0.988	0.494	1
Cl9-BZ#206	ND		ug/kg	0.988	0.494	1
Cl10-BZ#209	ND		ug/kg	0.988	0.494	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	57		30-150
DBOB	67		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-16
 Client ID: NV COMPOSITE 1 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 04:32
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.49	4.74	1
Acenaphthylene	5.28	J	ug/kg	9.49	4.74	1
Acenaphthene	14.2		ug/kg	9.49	4.74	1
Fluorene	16.4		ug/kg	9.49	4.74	1
Phenanthrene	28.2		ug/kg	9.49	4.74	1
Anthracene	4.92	J	ug/kg	9.49	4.74	1
Fluoranthene	5.55	J	ug/kg	9.49	4.74	1
Pyrene	ND		ug/kg	9.49	4.74	1
Benz(a)anthracene	ND		ug/kg	9.49	4.74	1
Chrysene	ND		ug/kg	9.49	4.74	1
Benzo(b)fluoranthene	ND		ug/kg	9.49	4.74	1
Benzo(k)fluoranthene	ND		ug/kg	9.49	4.74	1
Benzo(a)pyrene	ND		ug/kg	9.49	4.74	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.49	4.74	1
Dibenz(a,h)anthracene	ND		ug/kg	9.49	4.74	1
Benzo(ghi)perylene	ND		ug/kg	9.49	4.74	1
Cl2-BZ#8	ND		ug/kg	0.949	0.474	1
Cl3-BZ#18	ND		ug/kg	0.949	0.474	1
Cl3-BZ#28	ND		ug/kg	0.949	0.474	1
Cl4-BZ#44	ND		ug/kg	0.949	0.474	1
Cl4-BZ#49	ND		ug/kg	0.949	0.474	1
Cl4-BZ#52	ND		ug/kg	0.949	0.474	1
Cl4-BZ#66	ND		ug/kg	0.949	0.474	1
Cl5-BZ#87	ND		ug/kg	0.949	0.474	1
Cl5-BZ#101	ND		ug/kg	0.949	0.474	1
Cl5-BZ#105	ND		ug/kg	0.949	0.474	1
Cl5-BZ#118	ND		ug/kg	0.949	0.474	1
Cl6-BZ#128	ND		ug/kg	0.949	0.474	1
Cl6-BZ#138	0.720	J	ug/kg	0.949	0.474	1
Cl6-BZ#153	1.08		ug/kg	0.949	0.474	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-16

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.949	0.474	1
Cl7-BZ#180	ND		ug/kg	0.949	0.474	1
Cl7-BZ#183	ND		ug/kg	0.949	0.474	1
Cl7-BZ#184	ND		ug/kg	0.949	0.474	1
Cl7-BZ#187	ND		ug/kg	0.949	0.474	1
Cl8-BZ#195	ND		ug/kg	0.949	0.474	1
Cl9-BZ#206	ND		ug/kg	0.949	0.474	1
Cl10-BZ#209	ND		ug/kg	0.949	0.474	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	68		30-150
Benzo(b)fluoranthene-d12	63		30-150
DBOB	70		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-17
 Client ID: NV COMPOSITE 1 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 05:04
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.14	4.57	1
Acenaphthylene	ND		ug/kg	9.14	4.57	1
Acenaphthene	5.40	J	ug/kg	9.14	4.57	1
Fluorene	ND		ug/kg	9.14	4.57	1
Phenanthrene	ND		ug/kg	9.14	4.57	1
Anthracene	ND		ug/kg	9.14	4.57	1
Fluoranthene	ND		ug/kg	9.14	4.57	1
Pyrene	ND		ug/kg	9.14	4.57	1
Benz(a)anthracene	ND		ug/kg	9.14	4.57	1
Chrysene	ND		ug/kg	9.14	4.57	1
Benzo(b)fluoranthene	ND		ug/kg	9.14	4.57	1
Benzo(k)fluoranthene	ND		ug/kg	9.14	4.57	1
Benzo(a)pyrene	ND		ug/kg	9.14	4.57	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.14	4.57	1
Dibenz(a,h)anthracene	ND		ug/kg	9.14	4.57	1
Benzo(ghi)perylene	ND		ug/kg	9.14	4.57	1
Cl2-BZ#8	ND		ug/kg	0.914	0.457	1
Cl3-BZ#18	ND		ug/kg	0.914	0.457	1
Cl3-BZ#28	ND		ug/kg	0.914	0.457	1
Cl4-BZ#44	ND		ug/kg	0.914	0.457	1
Cl4-BZ#49	ND		ug/kg	0.914	0.457	1
Cl4-BZ#52	ND		ug/kg	0.914	0.457	1
Cl4-BZ#66	ND		ug/kg	0.914	0.457	1
Cl5-BZ#87	ND		ug/kg	0.914	0.457	1
Cl5-BZ#101	ND		ug/kg	0.914	0.457	1
Cl5-BZ#105	ND		ug/kg	0.914	0.457	1
Cl5-BZ#118	ND		ug/kg	0.914	0.457	1
Cl6-BZ#128	ND		ug/kg	0.914	0.457	1
Cl6-BZ#138	0.540	J	ug/kg	0.914	0.457	1
Cl6-BZ#153	0.650	J	ug/kg	0.914	0.457	1

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-17

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.914	0.457	1
Cl7-BZ#180	ND		ug/kg	0.914	0.457	1
Cl7-BZ#183	ND		ug/kg	0.914	0.457	1
Cl7-BZ#184	ND		ug/kg	0.914	0.457	1
Cl7-BZ#187	ND		ug/kg	0.914	0.457	1
Cl8-BZ#195	ND		ug/kg	0.914	0.457	1
Cl9-BZ#206	ND		ug/kg	0.914	0.457	1
Cl10-BZ#209	ND		ug/kg	0.914	0.457	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	49		30-150
Pyrene-d10	55		30-150
Benzo(b)fluoranthene-d12	52		30-150
DBOB	59		30-150
BZ 198	56		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-18
 Client ID: NV COMPOSITE 1 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 05:36
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.73	4.86	1
Acenaphthylene	ND		ug/kg	9.73	4.86	1
Acenaphthene	8.27	J	ug/kg	9.73	4.86	1
Fluorene	ND		ug/kg	9.73	4.86	1
Phenanthrene	5.82	J	ug/kg	9.73	4.86	1
Anthracene	ND		ug/kg	9.73	4.86	1
Fluoranthene	ND		ug/kg	9.73	4.86	1
Pyrene	ND		ug/kg	9.73	4.86	1
Benz(a)anthracene	ND		ug/kg	9.73	4.86	1
Chrysene	ND		ug/kg	9.73	4.86	1
Benzo(b)fluoranthene	ND		ug/kg	9.73	4.86	1
Benzo(k)fluoranthene	ND		ug/kg	9.73	4.86	1
Benzo(a)pyrene	ND		ug/kg	9.73	4.86	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.73	4.86	1
Dibenz(a,h)anthracene	ND		ug/kg	9.73	4.86	1
Benzo(ghi)perylene	ND		ug/kg	9.73	4.86	1
Cl2-BZ#8	ND		ug/kg	0.973	0.486	1
Cl3-BZ#18	ND		ug/kg	0.973	0.486	1
Cl3-BZ#28	ND		ug/kg	0.973	0.486	1
Cl4-BZ#44	ND		ug/kg	0.973	0.486	1
Cl4-BZ#49	ND		ug/kg	0.973	0.486	1
Cl4-BZ#52	ND		ug/kg	0.973	0.486	1
Cl4-BZ#66	ND		ug/kg	0.973	0.486	1
Cl5-BZ#87	ND		ug/kg	0.973	0.486	1
Cl5-BZ#101	ND		ug/kg	0.973	0.486	1
Cl5-BZ#105	ND		ug/kg	0.973	0.486	1
Cl5-BZ#118	ND		ug/kg	0.973	0.486	1
Cl6-BZ#128	ND		ug/kg	0.973	0.486	1
Cl6-BZ#138	0.732	J	ug/kg	0.973	0.486	1
Cl6-BZ#153	1.05		ug/kg	0.973	0.486	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-18

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.973	0.486	1
Cl7-BZ#180	ND		ug/kg	0.973	0.486	1
Cl7-BZ#183	ND		ug/kg	0.973	0.486	1
Cl7-BZ#184	ND		ug/kg	0.973	0.486	1
Cl7-BZ#187	ND		ug/kg	0.973	0.486	1
Cl8-BZ#195	ND		ug/kg	0.973	0.486	1
Cl9-BZ#206	ND		ug/kg	0.973	0.486	1
Cl10-BZ#209	ND		ug/kg	0.973	0.486	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	64		30-150
Pyrene-d10	69		30-150
Benzo(b)fluoranthene-d12	64		30-150
DBOB	73		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-19
 Client ID: NV COMPOSITE 1 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 06:08
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	5.09	J	ug/kg	9.52	4.76	1
Acenaphthylene	ND		ug/kg	9.52	4.76	1
Acenaphthene	ND		ug/kg	9.52	4.76	1
Fluorene	ND		ug/kg	9.52	4.76	1
Phenanthrene	6.01	J	ug/kg	9.52	4.76	1
Anthracene	ND		ug/kg	9.52	4.76	1
Fluoranthene	ND		ug/kg	9.52	4.76	1
Pyrene	ND		ug/kg	9.52	4.76	1
Benz(a)anthracene	ND		ug/kg	9.52	4.76	1
Chrysene	ND		ug/kg	9.52	4.76	1
Benzo(b)fluoranthene	ND		ug/kg	9.52	4.76	1
Benzo(k)fluoranthene	ND		ug/kg	9.52	4.76	1
Benzo(a)pyrene	ND		ug/kg	9.52	4.76	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.52	4.76	1
Dibenz(a,h)anthracene	ND		ug/kg	9.52	4.76	1
Benzo(ghi)perylene	ND		ug/kg	9.52	4.76	1
Cl2-BZ#8	ND		ug/kg	0.952	0.476	1
Cl3-BZ#18	ND		ug/kg	0.952	0.476	1
Cl3-BZ#28	ND		ug/kg	0.952	0.476	1
Cl4-BZ#44	ND		ug/kg	0.952	0.476	1
Cl4-BZ#49	ND		ug/kg	0.952	0.476	1
Cl4-BZ#52	ND		ug/kg	0.952	0.476	1
Cl4-BZ#66	ND		ug/kg	0.952	0.476	1
Cl5-BZ#87	ND		ug/kg	0.952	0.476	1
Cl5-BZ#101	ND		ug/kg	0.952	0.476	1
Cl5-BZ#105	ND		ug/kg	0.952	0.476	1
Cl5-BZ#118	ND		ug/kg	0.952	0.476	1
Cl6-BZ#128	ND		ug/kg	0.952	0.476	1
Cl6-BZ#138	0.795	J	ug/kg	0.952	0.476	1
Cl6-BZ#153	1.48		ug/kg	0.952	0.476	1

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-19
Client ID: NV COMPOSITE 1 REP D
Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.952	0.476	1
Cl7-BZ#180	0.632	J	ug/kg	0.952	0.476	1
Cl7-BZ#183	ND		ug/kg	0.952	0.476	1
Cl7-BZ#184	ND		ug/kg	0.952	0.476	1
Cl7-BZ#187	0.541	J	ug/kg	0.952	0.476	1
Cl8-BZ#195	ND		ug/kg	0.952	0.476	1
Cl9-BZ#206	ND		ug/kg	0.952	0.476	1
Cl10-BZ#209	ND		ug/kg	0.952	0.476	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	60		30-150
Pyrene-d10	63		30-150
Benzo(b)fluoranthene-d12	59		30-150
DBOB	70		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-20
 Client ID: NV COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/09/17 06:40
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	6.04	J	ug/kg	9.45	4.72	1
Acenaphthylene	ND		ug/kg	9.45	4.72	1
Acenaphthene	6.82	J	ug/kg	9.45	4.72	1
Fluorene	ND		ug/kg	9.45	4.72	1
Phenanthrene	7.90	J	ug/kg	9.45	4.72	1
Anthracene	ND		ug/kg	9.45	4.72	1
Fluoranthene	ND		ug/kg	9.45	4.72	1
Pyrene	ND		ug/kg	9.45	4.72	1
Benz(a)anthracene	ND		ug/kg	9.45	4.72	1
Chrysene	ND		ug/kg	9.45	4.72	1
Benzo(b)fluoranthene	ND		ug/kg	9.45	4.72	1
Benzo(k)fluoranthene	ND		ug/kg	9.45	4.72	1
Benzo(a)pyrene	ND		ug/kg	9.45	4.72	1
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	9.45	4.72	1
Dibenz(a,h)anthracene	ND		ug/kg	9.45	4.72	1
Benzo(ghi)perylene	ND		ug/kg	9.45	4.72	1
Cl2-BZ#8	ND		ug/kg	0.945	0.472	1
Cl3-BZ#18	ND		ug/kg	0.945	0.472	1
Cl3-BZ#28	ND		ug/kg	0.945	0.472	1
Cl4-BZ#44	ND		ug/kg	0.945	0.472	1
Cl4-BZ#49	ND		ug/kg	0.945	0.472	1
Cl4-BZ#52	ND		ug/kg	0.945	0.472	1
Cl4-BZ#66	ND		ug/kg	0.945	0.472	1
Cl5-BZ#87	ND		ug/kg	0.945	0.472	1
Cl5-BZ#101	0.784	J	ug/kg	0.945	0.472	1
Cl5-BZ#105	ND		ug/kg	0.945	0.472	1
Cl5-BZ#118	ND		ug/kg	0.945	0.472	1
Cl6-BZ#128	ND		ug/kg	0.945	0.472	1
Cl6-BZ#138	1.00		ug/kg	0.945	0.472	1
Cl6-BZ#153	1.53		ug/kg	0.945	0.472	1



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-20

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	0.945	0.472	1
CI7-BZ#180	0.745	J	ug/kg	0.945	0.472	1
CI7-BZ#183	ND		ug/kg	0.945	0.472	1
CI7-BZ#184	ND		ug/kg	0.945	0.472	1
CI7-BZ#187	0.669	J	ug/kg	0.945	0.472	1
CI8-BZ#195	ND		ug/kg	0.945	0.472	1
CI9-BZ#206	ND		ug/kg	0.945	0.472	1
CI10-BZ#209	ND		ug/kg	0.945	0.472	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	64		30-150
Pyrene-d10	70		30-150
Benzo(b)fluoranthene-d12	65		30-150
DBOB	75		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-21 D
 Client ID: NV COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 17:53

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.4	9.71	2
Acenaphthylene	ND		ug/kg	19.4	9.71	2
Acenaphthene	ND		ug/kg	19.4	9.71	2
Fluorene	ND		ug/kg	19.4	9.71	2
Phenanthrene	ND		ug/kg	19.4	9.71	2
Anthracene	ND		ug/kg	19.4	9.71	2
Fluoranthene	ND		ug/kg	19.4	9.71	2
Pyrene	ND		ug/kg	19.4	9.71	2
Benz(a)anthracene	ND		ug/kg	19.4	9.71	2
Chrysene	ND		ug/kg	19.4	9.71	2
Benzo(b)fluoranthene	ND		ug/kg	19.4	9.71	2
Benzo(k)fluoranthene	ND		ug/kg	19.4	9.71	2
Benzo(a)pyrene	ND		ug/kg	19.4	9.71	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.4	9.71	2
Dibenz(a,h)anthracene	ND		ug/kg	19.4	9.71	2
Benzo(ghi)perylene	ND		ug/kg	19.4	9.71	2
Cl2-BZ#8	ND		ug/kg	1.94	0.971	2
Cl3-BZ#18	ND		ug/kg	1.94	0.971	2
Cl3-BZ#28	ND		ug/kg	1.94	0.971	2
Cl4-BZ#44	ND		ug/kg	1.94	0.971	2
Cl4-BZ#49	ND		ug/kg	1.94	0.971	2
Cl4-BZ#52	ND		ug/kg	1.94	0.971	2
Cl4-BZ#66	ND		ug/kg	1.94	0.971	2
Cl5-BZ#87	ND		ug/kg	1.94	0.971	2
Cl5-BZ#101	ND		ug/kg	1.94	0.971	2
Cl5-BZ#105	ND		ug/kg	1.94	0.971	2
Cl5-BZ#118	ND		ug/kg	1.94	0.971	2
Cl6-BZ#128	ND		ug/kg	1.94	0.971	2
Cl6-BZ#138	ND		ug/kg	1.94	0.971	2
Cl6-BZ#153	ND		ug/kg	1.94	0.971	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-21 D
 Client ID: NV COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.94	0.971	2
CI7-BZ#180	ND		ug/kg	1.94	0.971	2
CI7-BZ#183	ND		ug/kg	1.94	0.971	2
CI7-BZ#184	ND		ug/kg	1.94	0.971	2
CI7-BZ#187	ND		ug/kg	1.94	0.971	2
CI8-BZ#195	ND		ug/kg	1.94	0.971	2
CI9-BZ#206	ND		ug/kg	1.94	0.971	2
CI10-BZ#209	ND		ug/kg	1.94	0.971	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	41		30-150
Pyrene-d10	55		30-150
Benzo(b)fluoranthene-d12	44		30-150
DBOB	58		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-22 D
 Client ID: NV COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 20:47

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.4	9.19	2
Acenaphthylene	ND		ug/kg	18.4	9.19	2
Acenaphthene	ND		ug/kg	18.4	9.19	2
Fluorene	ND		ug/kg	18.4	9.19	2
Phenanthrene	ND		ug/kg	18.4	9.19	2
Anthracene	ND		ug/kg	18.4	9.19	2
Fluoranthene	ND		ug/kg	18.4	9.19	2
Pyrene	ND		ug/kg	18.4	9.19	2
Benz(a)anthracene	ND		ug/kg	18.4	9.19	2
Chrysene	ND		ug/kg	18.4	9.19	2
Benzo(b)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(k)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(a)pyrene	ND		ug/kg	18.4	9.19	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.4	9.19	2
Dibenz(a,h)anthracene	ND		ug/kg	18.4	9.19	2
Benzo(ghi)perylene	ND		ug/kg	18.4	9.19	2
Cl2-BZ#8	ND		ug/kg	1.84	0.919	2
Cl3-BZ#18	ND		ug/kg	1.84	0.919	2
Cl3-BZ#28	ND		ug/kg	1.84	0.919	2
Cl4-BZ#44	ND		ug/kg	1.84	0.919	2
Cl4-BZ#49	ND		ug/kg	1.84	0.919	2
Cl4-BZ#52	ND		ug/kg	1.84	0.919	2
Cl4-BZ#66	ND		ug/kg	1.84	0.919	2
Cl5-BZ#87	ND		ug/kg	1.84	0.919	2
Cl5-BZ#101	ND		ug/kg	1.84	0.919	2
Cl5-BZ#105	ND		ug/kg	1.84	0.919	2
Cl5-BZ#118	ND		ug/kg	1.84	0.919	2
Cl6-BZ#128	ND		ug/kg	1.84	0.919	2
Cl6-BZ#138	ND		ug/kg	1.84	0.919	2
Cl6-BZ#153	ND		ug/kg	1.84	0.919	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-22 D
 Client ID: NV COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.84	0.919	2
CI7-BZ#180	ND		ug/kg	1.84	0.919	2
CI7-BZ#183	ND		ug/kg	1.84	0.919	2
CI7-BZ#184	ND		ug/kg	1.84	0.919	2
CI7-BZ#187	ND		ug/kg	1.84	0.919	2
CI8-BZ#195	ND		ug/kg	1.84	0.919	2
CI9-BZ#206	ND		ug/kg	1.84	0.919	2
CI10-BZ#209	ND		ug/kg	1.84	0.919	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	44		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	45		30-150
DBOB	65		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-23 D
 Client ID: NV COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 21:17

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.8	8.42	2
Acenaphthylene	ND		ug/kg	16.8	8.42	2
Acenaphthene	ND		ug/kg	16.8	8.42	2
Fluorene	ND		ug/kg	16.8	8.42	2
Phenanthrene	ND		ug/kg	16.8	8.42	2
Anthracene	ND		ug/kg	16.8	8.42	2
Fluoranthene	8.93	J	ug/kg	16.8	8.42	2
Pyrene	ND		ug/kg	16.8	8.42	2
Benz(a)anthracene	ND		ug/kg	16.8	8.42	2
Chrysene	ND		ug/kg	16.8	8.42	2
Benzo(b)fluoranthene	ND		ug/kg	16.8	8.42	2
Benzo(k)fluoranthene	ND		ug/kg	16.8	8.42	2
Benzo(a)pyrene	ND		ug/kg	16.8	8.42	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	16.8	8.42	2
Dibenz(a,h)anthracene	ND		ug/kg	16.8	8.42	2
Benzo(ghi)perylene	ND		ug/kg	16.8	8.42	2
Cl2-BZ#8	ND		ug/kg	1.68	0.842	2
Cl3-BZ#18	ND		ug/kg	1.68	0.842	2
Cl3-BZ#28	ND		ug/kg	1.68	0.842	2
Cl4-BZ#44	ND		ug/kg	1.68	0.842	2
Cl4-BZ#49	ND		ug/kg	1.68	0.842	2
Cl4-BZ#52	0.858	J	ug/kg	1.68	0.842	2
Cl4-BZ#66	ND		ug/kg	1.68	0.842	2
Cl5-BZ#87	ND		ug/kg	1.68	0.842	2
Cl5-BZ#101	ND		ug/kg	1.68	0.842	2
Cl5-BZ#105	ND		ug/kg	1.68	0.842	2
Cl5-BZ#118	ND		ug/kg	1.68	0.842	2
Cl6-BZ#128	ND		ug/kg	1.68	0.842	2
Cl6-BZ#138	ND		ug/kg	1.68	0.842	2
Cl6-BZ#153	0.914	J	ug/kg	1.68	0.842	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-23 D
 Client ID: NV COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.68	0.842	2
CI7-BZ#180	ND		ug/kg	1.68	0.842	2
CI7-BZ#183	ND		ug/kg	1.68	0.842	2
CI7-BZ#184	ND		ug/kg	1.68	0.842	2
CI7-BZ#187	ND		ug/kg	1.68	0.842	2
CI8-BZ#195	ND		ug/kg	1.68	0.842	2
CI9-BZ#206	ND		ug/kg	1.68	0.842	2
CI10-BZ#209	ND		ug/kg	1.68	0.842	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	46		30-150
Pyrene-d10	56		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	68		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-24 D
 Client ID: NV COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 21:48

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.5	9.76	2
Acenaphthylene	ND		ug/kg	19.5	9.76	2
Acenaphthene	ND		ug/kg	19.5	9.76	2
Fluorene	ND		ug/kg	19.5	9.76	2
Phenanthrene	ND		ug/kg	19.5	9.76	2
Anthracene	ND		ug/kg	19.5	9.76	2
Fluoranthene	ND		ug/kg	19.5	9.76	2
Pyrene	ND		ug/kg	19.5	9.76	2
Benz(a)anthracene	ND		ug/kg	19.5	9.76	2
Chrysene	ND		ug/kg	19.5	9.76	2
Benzo(b)fluoranthene	ND		ug/kg	19.5	9.76	2
Benzo(k)fluoranthene	ND		ug/kg	19.5	9.76	2
Benzo(a)pyrene	ND		ug/kg	19.5	9.76	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.5	9.76	2
Dibenz(a,h)anthracene	ND		ug/kg	19.5	9.76	2
Benzo(ghi)perylene	ND		ug/kg	19.5	9.76	2
Cl2-BZ#8	ND		ug/kg	1.95	0.976	2
Cl3-BZ#18	ND		ug/kg	1.95	0.976	2
Cl3-BZ#28	ND		ug/kg	1.95	0.976	2
Cl4-BZ#44	ND		ug/kg	1.95	0.976	2
Cl4-BZ#49	ND		ug/kg	1.95	0.976	2
Cl4-BZ#52	ND		ug/kg	1.95	0.976	2
Cl4-BZ#66	ND		ug/kg	1.95	0.976	2
Cl5-BZ#87	ND		ug/kg	1.95	0.976	2
Cl5-BZ#101	ND		ug/kg	1.95	0.976	2
Cl5-BZ#105	ND		ug/kg	1.95	0.976	2
Cl5-BZ#118	ND		ug/kg	1.95	0.976	2
Cl6-BZ#128	ND		ug/kg	1.95	0.976	2
Cl6-BZ#138	ND		ug/kg	1.95	0.976	2
Cl6-BZ#153	ND		ug/kg	1.95	0.976	2



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-24 D
 Client ID: NV COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.95	0.976	2
CI7-BZ#180	ND		ug/kg	1.95	0.976	2
CI7-BZ#183	ND		ug/kg	1.95	0.976	2
CI7-BZ#184	ND		ug/kg	1.95	0.976	2
CI7-BZ#187	ND		ug/kg	1.95	0.976	2
CI8-BZ#195	ND		ug/kg	1.95	0.976	2
CI9-BZ#206	ND		ug/kg	1.95	0.976	2
CI10-BZ#209	ND		ug/kg	1.95	0.976	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	51		30-150
Pyrene-d10	62		30-150
Benzo(b)fluoranthene-d12	53		30-150
DBOB	68		30-150
BZ 198	62		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-25 D
 Client ID: NV COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 22:18

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.4	8.71	2
Acenaphthylene	ND		ug/kg	17.4	8.71	2
Acenaphthene	ND		ug/kg	17.4	8.71	2
Fluorene	ND		ug/kg	17.4	8.71	2
Phenanthrene	ND		ug/kg	17.4	8.71	2
Anthracene	ND		ug/kg	17.4	8.71	2
Fluoranthene	9.87	J	ug/kg	17.4	8.71	2
Pyrene	9.30	J	ug/kg	17.4	8.71	2
Benz(a)anthracene	ND		ug/kg	17.4	8.71	2
Chrysene	ND		ug/kg	17.4	8.71	2
Benzo(b)fluoranthene	ND		ug/kg	17.4	8.71	2
Benzo(k)fluoranthene	ND		ug/kg	17.4	8.71	2
Benzo(a)pyrene	ND		ug/kg	17.4	8.71	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.4	8.71	2
Dibenz(a,h)anthracene	ND		ug/kg	17.4	8.71	2
Benzo(ghi)perylene	ND		ug/kg	17.4	8.71	2
Cl2-BZ#8	ND		ug/kg	1.74	0.871	2
Cl3-BZ#18	ND		ug/kg	1.74	0.871	2
Cl3-BZ#28	ND		ug/kg	1.74	0.871	2
Cl4-BZ#44	ND		ug/kg	1.74	0.871	2
Cl4-BZ#49	ND		ug/kg	1.74	0.871	2
Cl4-BZ#52	ND		ug/kg	1.74	0.871	2
Cl4-BZ#66	ND		ug/kg	1.74	0.871	2
Cl5-BZ#87	ND		ug/kg	1.74	0.871	2
Cl5-BZ#101	1.04	J	ug/kg	1.74	0.871	2
Cl5-BZ#105	ND		ug/kg	1.74	0.871	2
Cl5-BZ#118	ND		ug/kg	1.74	0.871	2
Cl6-BZ#128	ND		ug/kg	1.74	0.871	2
Cl6-BZ#138	ND		ug/kg	1.74	0.871	2
Cl6-BZ#153	1.05	J	ug/kg	1.74	0.871	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-25 D
 Client ID: NV COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.74	0.871	2
CI7-BZ#180	ND		ug/kg	1.74	0.871	2
CI7-BZ#183	ND		ug/kg	1.74	0.871	2
CI7-BZ#184	ND		ug/kg	1.74	0.871	2
CI7-BZ#187	ND		ug/kg	1.74	0.871	2
CI8-BZ#195	ND		ug/kg	1.74	0.871	2
CI9-BZ#206	ND		ug/kg	1.74	0.871	2
CI10-BZ#209	ND		ug/kg	1.74	0.871	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	45		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	71		30-150
BZ 198	56		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-26 D
 Client ID: NV COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/15/17 22:48
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.9	8.96	2
Acenaphthylene	ND		ug/kg	17.9	8.96	2
Acenaphthene	ND		ug/kg	17.9	8.96	2
Fluorene	ND		ug/kg	17.9	8.96	2
Phenanthrene	ND		ug/kg	17.9	8.96	2
Anthracene	ND		ug/kg	17.9	8.96	2
Fluoranthene	ND		ug/kg	17.9	8.96	2
Pyrene	ND		ug/kg	17.9	8.96	2
Benz(a)anthracene	ND		ug/kg	17.9	8.96	2
Chrysene	ND		ug/kg	17.9	8.96	2
Benzo(b)fluoranthene	ND		ug/kg	17.9	8.96	2
Benzo(k)fluoranthene	ND		ug/kg	17.9	8.96	2
Benzo(a)pyrene	ND		ug/kg	17.9	8.96	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.9	8.96	2
Dibenz(a,h)anthracene	ND		ug/kg	17.9	8.96	2
Benzo(ghi)perylene	ND		ug/kg	17.9	8.96	2
Cl2-BZ#8	ND		ug/kg	1.79	0.896	2
Cl3-BZ#18	ND		ug/kg	1.79	0.896	2
Cl3-BZ#28	ND		ug/kg	1.79	0.896	2
Cl4-BZ#44	ND		ug/kg	1.79	0.896	2
Cl4-BZ#49	ND		ug/kg	1.79	0.896	2
Cl4-BZ#52	ND		ug/kg	1.79	0.896	2
Cl4-BZ#66	ND		ug/kg	1.79	0.896	2
Cl5-BZ#87	ND		ug/kg	1.79	0.896	2
Cl5-BZ#101	ND		ug/kg	1.79	0.896	2
Cl5-BZ#105	ND		ug/kg	1.79	0.896	2
Cl5-BZ#118	ND		ug/kg	1.79	0.896	2
Cl6-BZ#128	ND		ug/kg	1.79	0.896	2
Cl6-BZ#138	ND		ug/kg	1.79	0.896	2
Cl6-BZ#153	0.953	J	ug/kg	1.79	0.896	2



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-26 D
 Client ID: NV COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.79	0.896	2
Cl7-BZ#180	ND		ug/kg	1.79	0.896	2
Cl7-BZ#183	ND		ug/kg	1.79	0.896	2
Cl7-BZ#184	ND		ug/kg	1.79	0.896	2
Cl7-BZ#187	ND		ug/kg	1.79	0.896	2
Cl8-BZ#195	ND		ug/kg	1.79	0.896	2
Cl9-BZ#206	ND		ug/kg	1.79	0.896	2
Cl10-BZ#209	ND		ug/kg	1.79	0.896	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	42		30-150
Pyrene-d10	50		30-150
Benzo(b)fluoranthene-d12	43		30-150
DBOB	60		30-150
BZ 198	52		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-27 D
 Client ID: NV COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 23:18

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.5	8.74	2
Acenaphthylene	ND		ug/kg	17.5	8.74	2
Acenaphthene	ND		ug/kg	17.5	8.74	2
Fluorene	ND		ug/kg	17.5	8.74	2
Phenanthrene	ND		ug/kg	17.5	8.74	2
Anthracene	ND		ug/kg	17.5	8.74	2
Fluoranthene	ND		ug/kg	17.5	8.74	2
Pyrene	ND		ug/kg	17.5	8.74	2
Benz(a)anthracene	ND		ug/kg	17.5	8.74	2
Chrysene	ND		ug/kg	17.5	8.74	2
Benzo(b)fluoranthene	ND		ug/kg	17.5	8.74	2
Benzo(k)fluoranthene	ND		ug/kg	17.5	8.74	2
Benzo(a)pyrene	ND		ug/kg	17.5	8.74	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.5	8.74	2
Dibenz(a,h)anthracene	ND		ug/kg	17.5	8.74	2
Benzo(ghi)perylene	ND		ug/kg	17.5	8.74	2
Cl2-BZ#8	ND		ug/kg	1.75	0.874	2
Cl3-BZ#18	ND		ug/kg	1.75	0.874	2
Cl3-BZ#28	ND		ug/kg	1.75	0.874	2
Cl4-BZ#44	ND		ug/kg	1.75	0.874	2
Cl4-BZ#49	ND		ug/kg	1.75	0.874	2
Cl4-BZ#52	ND		ug/kg	1.75	0.874	2
Cl4-BZ#66	ND		ug/kg	1.75	0.874	2
Cl5-BZ#87	ND		ug/kg	1.75	0.874	2
Cl5-BZ#101	0.904	J	ug/kg	1.75	0.874	2
Cl5-BZ#105	ND		ug/kg	1.75	0.874	2
Cl5-BZ#118	ND		ug/kg	1.75	0.874	2
Cl6-BZ#128	ND		ug/kg	1.75	0.874	2
Cl6-BZ#138	0.912	J	ug/kg	1.75	0.874	2
Cl6-BZ#153	1.33	J	ug/kg	1.75	0.874	2

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-27 D
 Client ID: NV COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.75	0.874	2
CI7-BZ#180	ND		ug/kg	1.75	0.874	2
CI7-BZ#183	ND		ug/kg	1.75	0.874	2
CI7-BZ#184	ND		ug/kg	1.75	0.874	2
CI7-BZ#187	ND		ug/kg	1.75	0.874	2
CI8-BZ#195	ND		ug/kg	1.75	0.874	2
CI9-BZ#206	ND		ug/kg	1.75	0.874	2
CI10-BZ#209	ND		ug/kg	1.75	0.874	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	44		30-150
Pyrene-d10	52		30-150
Benzo(b)fluoranthene-d12	42		30-150
DBOB	57		30-150
BZ 198	53		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-28 D
 Client ID: NV COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/15/17 23:48

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.8	9.92	2
Acenaphthylene	ND		ug/kg	19.8	9.92	2
Acenaphthene	ND		ug/kg	19.8	9.92	2
Fluorene	ND		ug/kg	19.8	9.92	2
Phenanthrene	ND		ug/kg	19.8	9.92	2
Anthracene	ND		ug/kg	19.8	9.92	2
Fluoranthene	ND		ug/kg	19.8	9.92	2
Pyrene	ND		ug/kg	19.8	9.92	2
Benz(a)anthracene	ND		ug/kg	19.8	9.92	2
Chrysene	ND		ug/kg	19.8	9.92	2
Benzo(b)fluoranthene	ND		ug/kg	19.8	9.92	2
Benzo(k)fluoranthene	ND		ug/kg	19.8	9.92	2
Benzo(a)pyrene	ND		ug/kg	19.8	9.92	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.8	9.92	2
Dibenz(a,h)anthracene	ND		ug/kg	19.8	9.92	2
Benzo(ghi)perylene	ND		ug/kg	19.8	9.92	2
Cl2-BZ#8	ND		ug/kg	1.98	0.992	2
Cl3-BZ#18	ND		ug/kg	1.98	0.992	2
Cl3-BZ#28	ND		ug/kg	1.98	0.992	2
Cl4-BZ#44	ND		ug/kg	1.98	0.992	2
Cl4-BZ#49	ND		ug/kg	1.98	0.992	2
Cl4-BZ#52	ND		ug/kg	1.98	0.992	2
Cl4-BZ#66	ND		ug/kg	1.98	0.992	2
Cl5-BZ#87	ND		ug/kg	1.98	0.992	2
Cl5-BZ#101	ND		ug/kg	1.98	0.992	2
Cl5-BZ#105	ND		ug/kg	1.98	0.992	2
Cl5-BZ#118	ND		ug/kg	1.98	0.992	2
Cl6-BZ#128	ND		ug/kg	1.98	0.992	2
Cl6-BZ#138	ND		ug/kg	1.98	0.992	2
Cl6-BZ#153	ND		ug/kg	1.98	0.992	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-28 D
 Client ID: NV COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.98	0.992	2
Cl7-BZ#180	ND		ug/kg	1.98	0.992	2
Cl7-BZ#183	ND		ug/kg	1.98	0.992	2
Cl7-BZ#184	ND		ug/kg	1.98	0.992	2
Cl7-BZ#187	ND		ug/kg	1.98	0.992	2
Cl8-BZ#195	ND		ug/kg	1.98	0.992	2
Cl9-BZ#206	ND		ug/kg	1.98	0.992	2
Cl10-BZ#209	ND		ug/kg	1.98	0.992	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	37		30-150
Pyrene-d10	44		30-150
Benzo(b)fluoranthene-d12	37		30-150
DBOB	51		30-150
BZ 198	46		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-29 D
 Client ID: NV COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 00:18

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.2	9.58	2
Acenaphthylene	ND		ug/kg	19.2	9.58	2
Acenaphthene	ND		ug/kg	19.2	9.58	2
Fluorene	ND		ug/kg	19.2	9.58	2
Phenanthrene	ND		ug/kg	19.2	9.58	2
Anthracene	ND		ug/kg	19.2	9.58	2
Fluoranthene	ND		ug/kg	19.2	9.58	2
Pyrene	ND		ug/kg	19.2	9.58	2
Benz(a)anthracene	ND		ug/kg	19.2	9.58	2
Chrysene	ND		ug/kg	19.2	9.58	2
Benzo(b)fluoranthene	ND		ug/kg	19.2	9.58	2
Benzo(k)fluoranthene	ND		ug/kg	19.2	9.58	2
Benzo(a)pyrene	ND		ug/kg	19.2	9.58	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.2	9.58	2
Dibenz(a,h)anthracene	ND		ug/kg	19.2	9.58	2
Benzo(ghi)perylene	ND		ug/kg	19.2	9.58	2
Cl2-BZ#8	ND		ug/kg	1.92	0.958	2
Cl3-BZ#18	ND		ug/kg	1.92	0.958	2
Cl3-BZ#28	ND		ug/kg	1.92	0.958	2
Cl4-BZ#44	ND		ug/kg	1.92	0.958	2
Cl4-BZ#49	ND		ug/kg	1.92	0.958	2
Cl4-BZ#52	ND		ug/kg	1.92	0.958	2
Cl4-BZ#66	ND		ug/kg	1.92	0.958	2
Cl5-BZ#87	ND		ug/kg	1.92	0.958	2
Cl5-BZ#101	ND		ug/kg	1.92	0.958	2
Cl5-BZ#105	ND		ug/kg	1.92	0.958	2
Cl5-BZ#118	ND		ug/kg	1.92	0.958	2
Cl6-BZ#128	ND		ug/kg	1.92	0.958	2
Cl6-BZ#138	ND		ug/kg	1.92	0.958	2
Cl6-BZ#153	ND		ug/kg	1.92	0.958	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-29 D
 Client ID: NV COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.92	0.958	2
CI7-BZ#180	ND		ug/kg	1.92	0.958	2
CI7-BZ#183	ND		ug/kg	1.92	0.958	2
CI7-BZ#184	ND		ug/kg	1.92	0.958	2
CI7-BZ#187	ND		ug/kg	1.92	0.958	2
CI8-BZ#195	ND		ug/kg	1.92	0.958	2
CI9-BZ#206	ND		ug/kg	1.92	0.958	2
CI10-BZ#209	ND		ug/kg	1.92	0.958	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	48		30-150
Pyrene-d10	61		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	72		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-30 D
 Client ID: NV COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 00:48

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.4	9.73	2
Acenaphthylene	ND		ug/kg	19.4	9.73	2
Acenaphthene	ND		ug/kg	19.4	9.73	2
Fluorene	ND		ug/kg	19.4	9.73	2
Phenanthrene	ND		ug/kg	19.4	9.73	2
Anthracene	ND		ug/kg	19.4	9.73	2
Fluoranthene	ND		ug/kg	19.4	9.73	2
Pyrene	ND		ug/kg	19.4	9.73	2
Benz(a)anthracene	ND		ug/kg	19.4	9.73	2
Chrysene	ND		ug/kg	19.4	9.73	2
Benzo(b)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(k)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(a)pyrene	ND		ug/kg	19.4	9.73	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.4	9.73	2
Dibenz(a,h)anthracene	ND		ug/kg	19.4	9.73	2
Benzo(ghi)perylene	ND		ug/kg	19.4	9.73	2
Cl2-BZ#8	ND		ug/kg	1.94	0.973	2
Cl3-BZ#18	ND		ug/kg	1.94	0.973	2
Cl3-BZ#28	ND		ug/kg	1.94	0.973	2
Cl4-BZ#44	ND		ug/kg	1.94	0.973	2
Cl4-BZ#49	ND		ug/kg	1.94	0.973	2
Cl4-BZ#52	ND		ug/kg	1.94	0.973	2
Cl4-BZ#66	ND		ug/kg	1.94	0.973	2
Cl5-BZ#87	ND		ug/kg	1.94	0.973	2
Cl5-BZ#101	ND		ug/kg	1.94	0.973	2
Cl5-BZ#105	ND		ug/kg	1.94	0.973	2
Cl5-BZ#118	ND		ug/kg	1.94	0.973	2
Cl6-BZ#128	ND		ug/kg	1.94	0.973	2
Cl6-BZ#138	ND		ug/kg	1.94	0.973	2
Cl6-BZ#153	1.23	J	ug/kg	1.94	0.973	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-30 D
 Client ID: NV COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.94	0.973	2
CI7-BZ#180	ND		ug/kg	1.94	0.973	2
CI7-BZ#183	ND		ug/kg	1.94	0.973	2
CI7-BZ#184	ND		ug/kg	1.94	0.973	2
CI7-BZ#187	ND		ug/kg	1.94	0.973	2
CI8-BZ#195	ND		ug/kg	1.94	0.973	2
CI9-BZ#206	ND		ug/kg	1.94	0.973	2
CI10-BZ#209	ND		ug/kg	1.94	0.973	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	76		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-31 D
 Client ID: NV COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/16/17 01:18
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.1	9.56	2
Acenaphthylene	ND		ug/kg	19.1	9.56	2
Acenaphthene	ND		ug/kg	19.1	9.56	2
Fluorene	ND		ug/kg	19.1	9.56	2
Phenanthrene	ND		ug/kg	19.1	9.56	2
Anthracene	ND		ug/kg	19.1	9.56	2
Fluoranthene	11.4	J	ug/kg	19.1	9.56	2
Pyrene	12.8	J	ug/kg	19.1	9.56	2
Benz(a)anthracene	ND		ug/kg	19.1	9.56	2
Chrysene	ND		ug/kg	19.1	9.56	2
Benzo(b)fluoranthene	ND		ug/kg	19.1	9.56	2
Benzo(k)fluoranthene	ND		ug/kg	19.1	9.56	2
Benzo(a)pyrene	ND		ug/kg	19.1	9.56	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.1	9.56	2
Dibenz(a,h)anthracene	ND		ug/kg	19.1	9.56	2
Benzo(ghi)perylene	ND		ug/kg	19.1	9.56	2
Cl2-BZ#8	ND		ug/kg	1.91	0.956	2
Cl3-BZ#18	ND		ug/kg	1.91	0.956	2
Cl3-BZ#28	ND		ug/kg	1.91	0.956	2
Cl4-BZ#44	ND		ug/kg	1.91	0.956	2
Cl4-BZ#49	ND		ug/kg	1.91	0.956	2
Cl4-BZ#52	ND		ug/kg	1.91	0.956	2
Cl4-BZ#66	ND		ug/kg	1.91	0.956	2
Cl5-BZ#87	ND		ug/kg	1.91	0.956	2
Cl5-BZ#101	ND		ug/kg	1.91	0.956	2
Cl5-BZ#105	ND		ug/kg	1.91	0.956	2
Cl5-BZ#118	ND		ug/kg	1.91	0.956	2
Cl6-BZ#128	ND		ug/kg	1.91	0.956	2
Cl6-BZ#138	ND		ug/kg	1.91	0.956	2
Cl6-BZ#153	1.23	J	ug/kg	1.91	0.956	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-31 D
 Client ID: NV COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.91	0.956	2
CI7-BZ#180	ND		ug/kg	1.91	0.956	2
CI7-BZ#183	ND		ug/kg	1.91	0.956	2
CI7-BZ#184	ND		ug/kg	1.91	0.956	2
CI7-BZ#187	ND		ug/kg	1.91	0.956	2
CI8-BZ#195	ND		ug/kg	1.91	0.956	2
CI9-BZ#206	ND		ug/kg	1.91	0.956	2
CI10-BZ#209	ND		ug/kg	1.91	0.956	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	39		30-150
Pyrene-d10	50		30-150
Benzo(b)fluoranthene-d12	40		30-150
DBOB	59		30-150
BZ 198	51		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-32 D
 Client ID: NV COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 01:48

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.2	8.58	2
Acenaphthylene	ND		ug/kg	17.2	8.58	2
Acenaphthene	ND		ug/kg	17.2	8.58	2
Fluorene	ND		ug/kg	17.2	8.58	2
Phenanthrene	ND		ug/kg	17.2	8.58	2
Anthracene	ND		ug/kg	17.2	8.58	2
Fluoranthene	ND		ug/kg	17.2	8.58	2
Pyrene	ND		ug/kg	17.2	8.58	2
Benz(a)anthracene	ND		ug/kg	17.2	8.58	2
Chrysene	ND		ug/kg	17.2	8.58	2
Benzo(b)fluoranthene	ND		ug/kg	17.2	8.58	2
Benzo(k)fluoranthene	ND		ug/kg	17.2	8.58	2
Benzo(a)pyrene	ND		ug/kg	17.2	8.58	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.2	8.58	2
Dibenz(a,h)anthracene	ND		ug/kg	17.2	8.58	2
Benzo(ghi)perylene	ND		ug/kg	17.2	8.58	2
Cl2-BZ#8	ND		ug/kg	1.72	0.858	2
Cl3-BZ#18	ND		ug/kg	1.72	0.858	2
Cl3-BZ#28	ND		ug/kg	1.72	0.858	2
Cl4-BZ#44	ND		ug/kg	1.72	0.858	2
Cl4-BZ#49	ND		ug/kg	1.72	0.858	2
Cl4-BZ#52	ND		ug/kg	1.72	0.858	2
Cl4-BZ#66	ND		ug/kg	1.72	0.858	2
Cl5-BZ#87	ND		ug/kg	1.72	0.858	2
Cl5-BZ#101	ND		ug/kg	1.72	0.858	2
Cl5-BZ#105	ND		ug/kg	1.72	0.858	2
Cl5-BZ#118	ND		ug/kg	1.72	0.858	2
Cl6-BZ#128	ND		ug/kg	1.72	0.858	2
Cl6-BZ#138	1.06	J	ug/kg	1.72	0.858	2
Cl6-BZ#153	1.42	J	ug/kg	1.72	0.858	2

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-32 D
 Client ID: NV COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.72	0.858	2
Cl7-BZ#180	ND		ug/kg	1.72	0.858	2
Cl7-BZ#183	ND		ug/kg	1.72	0.858	2
Cl7-BZ#184	ND		ug/kg	1.72	0.858	2
Cl7-BZ#187	ND		ug/kg	1.72	0.858	2
Cl8-BZ#195	ND		ug/kg	1.72	0.858	2
Cl9-BZ#206	ND		ug/kg	1.72	0.858	2
Cl10-BZ#209	ND		ug/kg	1.72	0.858	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	46		30-150
Pyrene-d10	53		30-150
Benzo(b)fluoranthene-d12	45		30-150
DBOB	67		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-33 D
 Client ID: NV COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/16/17 02:18
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.4	8.68	2
Acenaphthylene	ND		ug/kg	17.4	8.68	2
Acenaphthene	ND		ug/kg	17.4	8.68	2
Fluorene	ND		ug/kg	17.4	8.68	2
Phenanthrene	ND		ug/kg	17.4	8.68	2
Anthracene	ND		ug/kg	17.4	8.68	2
Fluoranthene	23.5		ug/kg	17.4	8.68	2
Pyrene	25.2		ug/kg	17.4	8.68	2
Benz(a)anthracene	ND		ug/kg	17.4	8.68	2
Chrysene	ND		ug/kg	17.4	8.68	2
Benzo(b)fluoranthene	ND		ug/kg	17.4	8.68	2
Benzo(k)fluoranthene	ND		ug/kg	17.4	8.68	2
Benzo(a)pyrene	ND		ug/kg	17.4	8.68	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.4	8.68	2
Dibenz(a,h)anthracene	ND		ug/kg	17.4	8.68	2
Benzo(ghi)perylene	ND		ug/kg	17.4	8.68	2
Cl2-BZ#8	ND		ug/kg	1.74	0.868	2
Cl3-BZ#18	ND		ug/kg	1.74	0.868	2
Cl3-BZ#28	ND		ug/kg	1.74	0.868	2
Cl4-BZ#44	ND		ug/kg	1.74	0.868	2
Cl4-BZ#49	ND		ug/kg	1.74	0.868	2
Cl4-BZ#52	ND		ug/kg	1.74	0.868	2
Cl4-BZ#66	ND		ug/kg	1.74	0.868	2
Cl5-BZ#87	ND		ug/kg	1.74	0.868	2
Cl5-BZ#101	ND		ug/kg	1.74	0.868	2
Cl5-BZ#105	ND		ug/kg	1.74	0.868	2
Cl5-BZ#118	ND		ug/kg	1.74	0.868	2
Cl6-BZ#128	ND		ug/kg	1.74	0.868	2
Cl6-BZ#138	ND		ug/kg	1.74	0.868	2
Cl6-BZ#153	ND		ug/kg	1.74	0.868	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-33 D
 Client ID: NV COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.74	0.868	2
Cl7-BZ#180	ND		ug/kg	1.74	0.868	2
Cl7-BZ#183	ND		ug/kg	1.74	0.868	2
Cl7-BZ#184	ND		ug/kg	1.74	0.868	2
Cl7-BZ#187	ND		ug/kg	1.74	0.868	2
Cl8-BZ#195	ND		ug/kg	1.74	0.868	2
Cl9-BZ#206	ND		ug/kg	1.74	0.868	2
Cl10-BZ#209	ND		ug/kg	1.74	0.868	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	44		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	45		30-150
DBOB	69		30-150
BZ 198	53		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-34 D
 Client ID: NV COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/16/17 02:48
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.34	2
Acenaphthylene	ND		ug/kg	18.7	9.34	2
Acenaphthene	ND		ug/kg	18.7	9.34	2
Fluorene	ND		ug/kg	18.7	9.34	2
Phenanthrene	ND		ug/kg	18.7	9.34	2
Anthracene	ND		ug/kg	18.7	9.34	2
Fluoranthene	ND		ug/kg	18.7	9.34	2
Pyrene	ND		ug/kg	18.7	9.34	2
Benz(a)anthracene	ND		ug/kg	18.7	9.34	2
Chrysene	ND		ug/kg	18.7	9.34	2
Benzo(b)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.34	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.34	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.34	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.34	2
Cl2-BZ#8	ND		ug/kg	1.87	0.934	2
Cl3-BZ#18	ND		ug/kg	1.87	0.934	2
Cl3-BZ#28	ND		ug/kg	1.87	0.934	2
Cl4-BZ#44	ND		ug/kg	1.87	0.934	2
Cl4-BZ#49	ND		ug/kg	1.87	0.934	2
Cl4-BZ#52	ND		ug/kg	1.87	0.934	2
Cl4-BZ#66	ND		ug/kg	1.87	0.934	2
Cl5-BZ#87	ND		ug/kg	1.87	0.934	2
Cl5-BZ#101	ND		ug/kg	1.87	0.934	2
Cl5-BZ#105	ND		ug/kg	1.87	0.934	2
Cl5-BZ#118	ND		ug/kg	1.87	0.934	2
Cl6-BZ#128	ND		ug/kg	1.87	0.934	2
Cl6-BZ#138	1.15	J	ug/kg	1.87	0.934	2
Cl6-BZ#153	1.48	J	ug/kg	1.87	0.934	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-34 D
 Client ID: NV COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.87	0.934	2
CI7-BZ#180	ND		ug/kg	1.87	0.934	2
CI7-BZ#183	ND		ug/kg	1.87	0.934	2
CI7-BZ#184	ND		ug/kg	1.87	0.934	2
CI7-BZ#187	ND		ug/kg	1.87	0.934	2
CI8-BZ#195	ND		ug/kg	1.87	0.934	2
CI9-BZ#206	ND		ug/kg	1.87	0.934	2
CI10-BZ#209	ND		ug/kg	1.87	0.934	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	45		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	46		30-150
DBOB	70		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-35 D
 Client ID: NV COMPOSITE 4 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 03:18

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.4	9.22	2
Acenaphthylene	ND		ug/kg	18.4	9.22	2
Acenaphthene	ND		ug/kg	18.4	9.22	2
Fluorene	ND		ug/kg	18.4	9.22	2
Phenanthrene	ND		ug/kg	18.4	9.22	2
Anthracene	ND		ug/kg	18.4	9.22	2
Fluoranthene	12.2	J	ug/kg	18.4	9.22	2
Pyrene	15.0	J	ug/kg	18.4	9.22	2
Benz(a)anthracene	ND		ug/kg	18.4	9.22	2
Chrysene	ND		ug/kg	18.4	9.22	2
Benzo(b)fluoranthene	ND		ug/kg	18.4	9.22	2
Benzo(k)fluoranthene	ND		ug/kg	18.4	9.22	2
Benzo(a)pyrene	ND		ug/kg	18.4	9.22	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.4	9.22	2
Dibenz(a,h)anthracene	ND		ug/kg	18.4	9.22	2
Benzo(ghi)perylene	ND		ug/kg	18.4	9.22	2
Cl2-BZ#8	ND		ug/kg	1.84	0.922	2
Cl3-BZ#18	ND		ug/kg	1.84	0.922	2
Cl3-BZ#28	ND		ug/kg	1.84	0.922	2
Cl4-BZ#44	ND		ug/kg	1.84	0.922	2
Cl4-BZ#49	ND		ug/kg	1.84	0.922	2
Cl4-BZ#52	ND		ug/kg	1.84	0.922	2
Cl4-BZ#66	ND		ug/kg	1.84	0.922	2
Cl5-BZ#87	ND		ug/kg	1.84	0.922	2
Cl5-BZ#101	ND		ug/kg	1.84	0.922	2
Cl5-BZ#105	ND		ug/kg	1.84	0.922	2
Cl5-BZ#118	ND		ug/kg	1.84	0.922	2
Cl6-BZ#128	ND		ug/kg	1.84	0.922	2
Cl6-BZ#138	ND		ug/kg	1.84	0.922	2
Cl6-BZ#153	ND		ug/kg	1.84	0.922	2

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-35 D
 Client ID: NV COMPOSITE 4 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.84	0.922	2
CI7-BZ#180	ND		ug/kg	1.84	0.922	2
CI7-BZ#183	ND		ug/kg	1.84	0.922	2
CI7-BZ#184	ND		ug/kg	1.84	0.922	2
CI7-BZ#187	ND		ug/kg	1.84	0.922	2
CI8-BZ#195	ND		ug/kg	1.84	0.922	2
CI9-BZ#206	ND		ug/kg	1.84	0.922	2
CI10-BZ#209	ND		ug/kg	1.84	0.922	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	42		30-150
Pyrene-d10	48		30-150
Benzo(b)fluoranthene-d12	41		30-150
DBOB	58		30-150
BZ 198	51		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-36 D
 Client ID: NV COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 12:48

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.6	9.29	2
Acenaphthylene	ND		ug/kg	18.6	9.29	2
Acenaphthene	ND		ug/kg	18.6	9.29	2
Fluorene	ND		ug/kg	18.6	9.29	2
Phenanthrene	ND		ug/kg	18.6	9.29	2
Anthracene	ND		ug/kg	18.6	9.29	2
Fluoranthene	15.8	J	ug/kg	18.6	9.29	2
Pyrene	14.0	J	ug/kg	18.6	9.29	2
Benz(a)anthracene	ND		ug/kg	18.6	9.29	2
Chrysene	ND		ug/kg	18.6	9.29	2
Benzo(b)fluoranthene	ND		ug/kg	18.6	9.29	2
Benzo(k)fluoranthene	ND		ug/kg	18.6	9.29	2
Benzo(a)pyrene	ND		ug/kg	18.6	9.29	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.6	9.29	2
Dibenz(a,h)anthracene	ND		ug/kg	18.6	9.29	2
Benzo(ghi)perylene	ND		ug/kg	18.6	9.29	2
Cl2-BZ#8	ND		ug/kg	1.86	0.929	2
Cl3-BZ#18	ND		ug/kg	1.86	0.929	2
Cl3-BZ#28	ND		ug/kg	1.86	0.929	2
Cl4-BZ#44	ND		ug/kg	1.86	0.929	2
Cl4-BZ#49	ND		ug/kg	1.86	0.929	2
Cl4-BZ#52	ND		ug/kg	1.86	0.929	2
Cl4-BZ#66	ND		ug/kg	1.86	0.929	2
Cl5-BZ#87	ND		ug/kg	1.86	0.929	2
Cl5-BZ#101	ND		ug/kg	1.86	0.929	2
Cl5-BZ#105	ND		ug/kg	1.86	0.929	2
Cl5-BZ#118	ND		ug/kg	1.86	0.929	2
Cl6-BZ#128	ND		ug/kg	1.86	0.929	2
Cl6-BZ#138	ND		ug/kg	1.86	0.929	2
Cl6-BZ#153	ND		ug/kg	1.86	0.929	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-36 D
 Client ID: NV COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.86	0.929	2
CI7-BZ#180	ND		ug/kg	1.86	0.929	2
CI7-BZ#183	ND		ug/kg	1.86	0.929	2
CI7-BZ#184	ND		ug/kg	1.86	0.929	2
CI7-BZ#187	ND		ug/kg	1.86	0.929	2
CI8-BZ#195	ND		ug/kg	1.86	0.929	2
CI9-BZ#206	ND		ug/kg	1.86	0.929	2
CI10-BZ#209	ND		ug/kg	1.86	0.929	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	48		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	47		30-150
DBOB	64		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-37 D
 Client ID: NV COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/16/17 13:18
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.36	2
Acenaphthylene	ND		ug/kg	18.7	9.36	2
Acenaphthene	ND		ug/kg	18.7	9.36	2
Fluorene	ND		ug/kg	18.7	9.36	2
Phenanthrene	ND		ug/kg	18.7	9.36	2
Anthracene	ND		ug/kg	18.7	9.36	2
Fluoranthene	ND		ug/kg	18.7	9.36	2
Pyrene	ND		ug/kg	18.7	9.36	2
Benz(a)anthracene	ND		ug/kg	18.7	9.36	2
Chrysene	ND		ug/kg	18.7	9.36	2
Benzo(b)fluoranthene	ND		ug/kg	18.7	9.36	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.36	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.36	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.36	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.36	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.36	2
Cl2-BZ#8	ND		ug/kg	1.87	0.936	2
Cl3-BZ#18	ND		ug/kg	1.87	0.936	2
Cl3-BZ#28	ND		ug/kg	1.87	0.936	2
Cl4-BZ#44	ND		ug/kg	1.87	0.936	2
Cl4-BZ#49	ND		ug/kg	1.87	0.936	2
Cl4-BZ#52	ND		ug/kg	1.87	0.936	2
Cl4-BZ#66	ND		ug/kg	1.87	0.936	2
Cl5-BZ#87	ND		ug/kg	1.87	0.936	2
Cl5-BZ#101	ND		ug/kg	1.87	0.936	2
Cl5-BZ#105	ND		ug/kg	1.87	0.936	2
Cl5-BZ#118	ND		ug/kg	1.87	0.936	2
Cl6-BZ#128	ND		ug/kg	1.87	0.936	2
Cl6-BZ#138	0.936	J	ug/kg	1.87	0.936	2
Cl6-BZ#153	1.54	J	ug/kg	1.87	0.936	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-37 D
 Client ID: NV COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.87	0.936	2
CI7-BZ#180	ND		ug/kg	1.87	0.936	2
CI7-BZ#183	ND		ug/kg	1.87	0.936	2
CI7-BZ#184	ND		ug/kg	1.87	0.936	2
CI7-BZ#187	ND		ug/kg	1.87	0.936	2
CI8-BZ#195	ND		ug/kg	1.87	0.936	2
CI9-BZ#206	ND		ug/kg	1.87	0.936	2
CI10-BZ#209	ND		ug/kg	1.87	0.936	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	51		30-150
Pyrene-d10	52		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	63		30-150
BZ 198	58		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-38 D
 Client ID: NV COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 13:49

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.4	9.19	2
Acenaphthylene	ND		ug/kg	18.4	9.19	2
Acenaphthene	ND		ug/kg	18.4	9.19	2
Fluorene	ND		ug/kg	18.4	9.19	2
Phenanthrene	ND		ug/kg	18.4	9.19	2
Anthracene	ND		ug/kg	18.4	9.19	2
Fluoranthene	9.96	J	ug/kg	18.4	9.19	2
Pyrene	ND		ug/kg	18.4	9.19	2
Benz(a)anthracene	ND		ug/kg	18.4	9.19	2
Chrysene	ND		ug/kg	18.4	9.19	2
Benzo(b)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(k)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(a)pyrene	ND		ug/kg	18.4	9.19	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.4	9.19	2
Dibenz(a,h)anthracene	ND		ug/kg	18.4	9.19	2
Benzo(ghi)perylene	ND		ug/kg	18.4	9.19	2
Cl2-BZ#8	ND		ug/kg	1.84	0.919	2
Cl3-BZ#18	ND		ug/kg	1.84	0.919	2
Cl3-BZ#28	ND		ug/kg	1.84	0.919	2
Cl4-BZ#44	ND		ug/kg	1.84	0.919	2
Cl4-BZ#49	ND		ug/kg	1.84	0.919	2
Cl4-BZ#52	ND		ug/kg	1.84	0.919	2
Cl4-BZ#66	ND		ug/kg	1.84	0.919	2
Cl5-BZ#87	ND		ug/kg	1.84	0.919	2
Cl5-BZ#101	ND		ug/kg	1.84	0.919	2
Cl5-BZ#105	ND		ug/kg	1.84	0.919	2
Cl5-BZ#118	ND		ug/kg	1.84	0.919	2
Cl6-BZ#128	ND		ug/kg	1.84	0.919	2
Cl6-BZ#138	ND		ug/kg	1.84	0.919	2
Cl6-BZ#153	1.36	J	ug/kg	1.84	0.919	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-38 D
 Client ID: NV COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.84	0.919	2
CI7-BZ#180	ND		ug/kg	1.84	0.919	2
CI7-BZ#183	ND		ug/kg	1.84	0.919	2
CI7-BZ#184	ND		ug/kg	1.84	0.919	2
CI7-BZ#187	ND		ug/kg	1.84	0.919	2
CI8-BZ#195	ND		ug/kg	1.84	0.919	2
CI9-BZ#206	ND		ug/kg	1.84	0.919	2
CI10-BZ#209	ND		ug/kg	1.84	0.919	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	54		30-150
Pyrene-d10	54		30-150
Benzo(b)fluoranthene-d12	51		30-150
DBOB	70		30-150
BZ 198	58		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-39 D
 Client ID: NV COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 13:30

Analytical Date: 11/16/17 14:19

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.7	8.86	2
Acenaphthylene	ND		ug/kg	17.7	8.86	2
Acenaphthene	ND		ug/kg	17.7	8.86	2
Fluorene	ND		ug/kg	17.7	8.86	2
Phenanthrene	ND		ug/kg	17.7	8.86	2
Anthracene	ND		ug/kg	17.7	8.86	2
Fluoranthene	ND		ug/kg	17.7	8.86	2
Pyrene	ND		ug/kg	17.7	8.86	2
Benz(a)anthracene	ND		ug/kg	17.7	8.86	2
Chrysene	ND		ug/kg	17.7	8.86	2
Benzo(b)fluoranthene	ND		ug/kg	17.7	8.86	2
Benzo(k)fluoranthene	ND		ug/kg	17.7	8.86	2
Benzo(a)pyrene	ND		ug/kg	17.7	8.86	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.7	8.86	2
Dibenz(a,h)anthracene	ND		ug/kg	17.7	8.86	2
Benzo(ghi)perylene	ND		ug/kg	17.7	8.86	2
Cl2-BZ#8	ND		ug/kg	1.77	0.886	2
Cl3-BZ#18	ND		ug/kg	1.77	0.886	2
Cl3-BZ#28	ND		ug/kg	1.77	0.886	2
Cl4-BZ#44	ND		ug/kg	1.77	0.886	2
Cl4-BZ#49	ND		ug/kg	1.77	0.886	2
Cl4-BZ#52	ND		ug/kg	1.77	0.886	2
Cl4-BZ#66	ND		ug/kg	1.77	0.886	2
Cl5-BZ#87	ND		ug/kg	1.77	0.886	2
Cl5-BZ#101	ND		ug/kg	1.77	0.886	2
Cl5-BZ#105	ND		ug/kg	1.77	0.886	2
Cl5-BZ#118	ND		ug/kg	1.77	0.886	2
Cl6-BZ#128	ND		ug/kg	1.77	0.886	2
Cl6-BZ#138	ND		ug/kg	1.77	0.886	2
Cl6-BZ#153	1.09	J	ug/kg	1.77	0.886	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-39 D
 Client ID: NV COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.77	0.886	2
CI7-BZ#180	ND		ug/kg	1.77	0.886	2
CI7-BZ#183	ND		ug/kg	1.77	0.886	2
CI7-BZ#184	ND		ug/kg	1.77	0.886	2
CI7-BZ#187	ND		ug/kg	1.77	0.886	2
CI8-BZ#195	ND		ug/kg	1.77	0.886	2
CI9-BZ#206	ND		ug/kg	1.77	0.886	2
CI10-BZ#209	ND		ug/kg	1.77	0.886	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	53		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	63		30-150
BZ 198	56		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-40 D
 Client ID: NV COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/16/17 14:50
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.4	9.73	2
Acenaphthylene	ND		ug/kg	19.4	9.73	2
Acenaphthene	ND		ug/kg	19.4	9.73	2
Fluorene	ND		ug/kg	19.4	9.73	2
Phenanthrene	ND		ug/kg	19.4	9.73	2
Anthracene	ND		ug/kg	19.4	9.73	2
Fluoranthene	ND		ug/kg	19.4	9.73	2
Pyrene	ND		ug/kg	19.4	9.73	2
Benz(a)anthracene	ND		ug/kg	19.4	9.73	2
Chrysene	ND		ug/kg	19.4	9.73	2
Benzo(b)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(k)fluoranthene	ND		ug/kg	19.4	9.73	2
Benzo(a)pyrene	ND		ug/kg	19.4	9.73	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.4	9.73	2
Dibenz(a,h)anthracene	ND		ug/kg	19.4	9.73	2
Benzo(ghi)perylene	ND		ug/kg	19.4	9.73	2
Cl2-BZ#8	ND		ug/kg	1.94	0.973	2
Cl3-BZ#18	ND		ug/kg	1.94	0.973	2
Cl3-BZ#28	ND		ug/kg	1.94	0.973	2
Cl4-BZ#44	ND		ug/kg	1.94	0.973	2
Cl4-BZ#49	ND		ug/kg	1.94	0.973	2
Cl4-BZ#52	ND		ug/kg	1.94	0.973	2
Cl4-BZ#66	ND		ug/kg	1.94	0.973	2
Cl5-BZ#87	ND		ug/kg	1.94	0.973	2
Cl5-BZ#101	ND		ug/kg	1.94	0.973	2
Cl5-BZ#105	ND		ug/kg	1.94	0.973	2
Cl5-BZ#118	ND		ug/kg	1.94	0.973	2
Cl6-BZ#128	ND		ug/kg	1.94	0.973	2
Cl6-BZ#138	ND		ug/kg	1.94	0.973	2
Cl6-BZ#153	0.992	J	ug/kg	1.94	0.973	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-40 D
 Client ID: NV COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.94	0.973	2
Cl7-BZ#180	ND		ug/kg	1.94	0.973	2
Cl7-BZ#183	ND		ug/kg	1.94	0.973	2
Cl7-BZ#184	ND		ug/kg	1.94	0.973	2
Cl7-BZ#187	ND		ug/kg	1.94	0.973	2
Cl8-BZ#195	ND		ug/kg	1.94	0.973	2
Cl9-BZ#206	ND		ug/kg	1.94	0.973	2
Cl10-BZ#209	ND		ug/kg	1.94	0.973	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	51		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	68		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-41 D
 Client ID: NV COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/16/17 21:26

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.1	8.53	2
Acenaphthylene	ND		ug/kg	17.1	8.53	2
Acenaphthene	ND		ug/kg	17.1	8.53	2
Fluorene	ND		ug/kg	17.1	8.53	2
Phenanthrene	ND		ug/kg	17.1	8.53	2
Anthracene	ND		ug/kg	17.1	8.53	2
Fluoranthene	20.3		ug/kg	17.1	8.53	2
Pyrene	15.2	J	ug/kg	17.1	8.53	2
Benz(a)anthracene	ND		ug/kg	17.1	8.53	2
Chrysene	ND		ug/kg	17.1	8.53	2
Benzo(b)fluoranthene	ND		ug/kg	17.1	8.53	2
Benzo(k)fluoranthene	ND		ug/kg	17.1	8.53	2
Benzo(a)pyrene	ND		ug/kg	17.1	8.53	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.1	8.53	2
Dibenz(a,h)anthracene	ND		ug/kg	17.1	8.53	2
Benzo(ghi)perylene	ND		ug/kg	17.1	8.53	2
Cl2-BZ#8	ND		ug/kg	1.71	0.853	2
Cl3-BZ#18	ND		ug/kg	1.71	0.853	2
Cl3-BZ#28	ND		ug/kg	1.71	0.853	2
Cl4-BZ#44	ND		ug/kg	1.71	0.853	2
Cl4-BZ#49	ND		ug/kg	1.71	0.853	2
Cl4-BZ#52	2.20		ug/kg	1.71	0.853	2
Cl4-BZ#66	ND		ug/kg	1.71	0.853	2
Cl5-BZ#87	ND		ug/kg	1.71	0.853	2
Cl5-BZ#101	1.47	J	ug/kg	1.71	0.853	2
Cl5-BZ#105	ND		ug/kg	1.71	0.853	2
Cl5-BZ#118	ND		ug/kg	1.71	0.853	2
Cl6-BZ#128	ND		ug/kg	1.71	0.853	2
Cl6-BZ#138	ND		ug/kg	1.71	0.853	2
Cl6-BZ#153	0.923	J	ug/kg	1.71	0.853	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-41 D
 Client ID: NV COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.71	0.853	2
CI7-BZ#180	ND		ug/kg	1.71	0.853	2
CI7-BZ#183	ND		ug/kg	1.71	0.853	2
CI7-BZ#184	ND		ug/kg	1.71	0.853	2
CI7-BZ#187	ND		ug/kg	1.71	0.853	2
CI8-BZ#195	ND		ug/kg	1.71	0.853	2
CI9-BZ#206	ND		ug/kg	1.71	0.853	2
CI10-BZ#209	ND		ug/kg	1.71	0.853	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	40		30-150
Pyrene-d10	42		30-150
Benzo(b)fluoranthene-d12	37		30-150
DBOB	49		30-150
BZ 198	46		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-42 D
 Client ID: NV COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/16/17 23:37

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.6	9.80	2
Acenaphthylene	ND		ug/kg	19.6	9.80	2
Acenaphthene	ND		ug/kg	19.6	9.80	2
Fluorene	ND		ug/kg	19.6	9.80	2
Phenanthrene	ND		ug/kg	19.6	9.80	2
Anthracene	ND		ug/kg	19.6	9.80	2
Fluoranthene	10.6	J	ug/kg	19.6	9.80	2
Pyrene	ND		ug/kg	19.6	9.80	2
Benz(a)anthracene	ND		ug/kg	19.6	9.80	2
Chrysene	ND		ug/kg	19.6	9.80	2
Benzo(b)fluoranthene	ND		ug/kg	19.6	9.80	2
Benzo(k)fluoranthene	ND		ug/kg	19.6	9.80	2
Benzo(a)pyrene	ND		ug/kg	19.6	9.80	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.6	9.80	2
Dibenz(a,h)anthracene	ND		ug/kg	19.6	9.80	2
Benzo(ghi)perylene	ND		ug/kg	19.6	9.80	2
Cl2-BZ#8	ND		ug/kg	1.96	0.980	2
Cl3-BZ#18	ND		ug/kg	1.96	0.980	2
Cl3-BZ#28	ND		ug/kg	1.96	0.980	2
Cl4-BZ#44	ND		ug/kg	1.96	0.980	2
Cl4-BZ#49	ND		ug/kg	1.96	0.980	2
Cl4-BZ#52	1.51	J	ug/kg	1.96	0.980	2
Cl4-BZ#66	ND		ug/kg	1.96	0.980	2
Cl5-BZ#87	ND		ug/kg	1.96	0.980	2
Cl5-BZ#101	ND		ug/kg	1.96	0.980	2
Cl5-BZ#105	ND		ug/kg	1.96	0.980	2
Cl5-BZ#118	ND		ug/kg	1.96	0.980	2
Cl6-BZ#128	ND		ug/kg	1.96	0.980	2
Cl6-BZ#138	1.46	J	ug/kg	1.96	0.980	2
Cl6-BZ#153	2.45		ug/kg	1.96	0.980	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-42 D
 Client ID: NV COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.96	0.980	2
CI7-BZ#180	ND		ug/kg	1.96	0.980	2
CI7-BZ#183	ND		ug/kg	1.96	0.980	2
CI7-BZ#184	ND		ug/kg	1.96	0.980	2
CI7-BZ#187	ND		ug/kg	1.96	0.980	2
CI8-BZ#195	ND		ug/kg	1.96	0.980	2
CI9-BZ#206	ND		ug/kg	1.96	0.980	2
CI10-BZ#209	ND		ug/kg	1.96	0.980	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	53		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	49		30-150
DBOB	70		30-150
BZ 198	63		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-43 D
 Client ID: NV COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 00:10

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.5	9.76	2
Acenaphthylene	ND		ug/kg	19.5	9.76	2
Acenaphthene	12.2	J	ug/kg	19.5	9.76	2
Fluorene	ND		ug/kg	19.5	9.76	2
Phenanthrene	ND		ug/kg	19.5	9.76	2
Anthracene	ND		ug/kg	19.5	9.76	2
Fluoranthene	26.9		ug/kg	19.5	9.76	2
Pyrene	20.3		ug/kg	19.5	9.76	2
Benz(a)anthracene	ND		ug/kg	19.5	9.76	2
Chrysene	ND		ug/kg	19.5	9.76	2
Benzo(b)fluoranthene	ND		ug/kg	19.5	9.76	2
Benzo(k)fluoranthene	ND		ug/kg	19.5	9.76	2
Benzo(a)pyrene	ND		ug/kg	19.5	9.76	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.5	9.76	2
Dibenz(a,h)anthracene	ND		ug/kg	19.5	9.76	2
Benzo(ghi)perylene	ND		ug/kg	19.5	9.76	2
Cl2-BZ#8	ND		ug/kg	1.95	0.976	2
Cl3-BZ#18	ND		ug/kg	1.95	0.976	2
Cl3-BZ#28	ND		ug/kg	1.95	0.976	2
Cl4-BZ#44	ND		ug/kg	1.95	0.976	2
Cl4-BZ#49	ND		ug/kg	1.95	0.976	2
Cl4-BZ#52	2.66		ug/kg	1.95	0.976	2
Cl4-BZ#66	ND		ug/kg	1.95	0.976	2
Cl5-BZ#87	ND		ug/kg	1.95	0.976	2
Cl5-BZ#101	2.18		ug/kg	1.95	0.976	2
Cl5-BZ#105	ND		ug/kg	1.95	0.976	2
Cl5-BZ#118	ND		ug/kg	1.95	0.976	2
Cl6-BZ#128	ND		ug/kg	1.95	0.976	2
Cl6-BZ#138	1.52	J	ug/kg	1.95	0.976	2
Cl6-BZ#153	2.01		ug/kg	1.95	0.976	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-43 D
 Client ID: NV COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.95	0.976	2
Cl7-BZ#180	ND		ug/kg	1.95	0.976	2
Cl7-BZ#183	ND		ug/kg	1.95	0.976	2
Cl7-BZ#184	ND		ug/kg	1.95	0.976	2
Cl7-BZ#187	ND		ug/kg	1.95	0.976	2
Cl8-BZ#195	ND		ug/kg	1.95	0.976	2
Cl9-BZ#206	ND		ug/kg	1.95	0.976	2
Cl10-BZ#209	ND		ug/kg	1.95	0.976	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	58		30-150
Pyrene-d10	62		30-150
Benzo(b)fluoranthene-d12	54		30-150
DBOB	78		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-44 D
 Client ID: NV COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 00:43

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.34	2
Acenaphthylene	ND		ug/kg	18.7	9.34	2
Acenaphthene	ND		ug/kg	18.7	9.34	2
Fluorene	ND		ug/kg	18.7	9.34	2
Phenanthrene	ND		ug/kg	18.7	9.34	2
Anthracene	ND		ug/kg	18.7	9.34	2
Fluoranthene	14.2	J	ug/kg	18.7	9.34	2
Pyrene	10.2	J	ug/kg	18.7	9.34	2
Benz(a)anthracene	ND		ug/kg	18.7	9.34	2
Chrysene	ND		ug/kg	18.7	9.34	2
Benzo(b)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.34	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.34	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.34	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.34	2
Cl2-BZ#8	ND		ug/kg	1.87	0.934	2
Cl3-BZ#18	ND		ug/kg	1.87	0.934	2
Cl3-BZ#28	ND		ug/kg	1.87	0.934	2
Cl4-BZ#44	ND		ug/kg	1.87	0.934	2
Cl4-BZ#49	ND		ug/kg	1.87	0.934	2
Cl4-BZ#52	1.85	J	ug/kg	1.87	0.934	2
Cl4-BZ#66	ND		ug/kg	1.87	0.934	2
Cl5-BZ#87	ND		ug/kg	1.87	0.934	2
Cl5-BZ#101	ND		ug/kg	1.87	0.934	2
Cl5-BZ#105	ND		ug/kg	1.87	0.934	2
Cl5-BZ#118	ND		ug/kg	1.87	0.934	2
Cl6-BZ#128	ND		ug/kg	1.87	0.934	2
Cl6-BZ#138	2.06		ug/kg	1.87	0.934	2
Cl6-BZ#153	2.92		ug/kg	1.87	0.934	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-44 D
 Client ID: NV COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.87	0.934	2
CI7-BZ#180	ND		ug/kg	1.87	0.934	2
CI7-BZ#183	ND		ug/kg	1.87	0.934	2
CI7-BZ#184	ND		ug/kg	1.87	0.934	2
CI7-BZ#187	ND		ug/kg	1.87	0.934	2
CI8-BZ#195	ND		ug/kg	1.87	0.934	2
CI9-BZ#206	ND		ug/kg	1.87	0.934	2
CI10-BZ#209	ND		ug/kg	1.87	0.934	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	67		30-150
Benzo(b)fluoranthene-d12	58		30-150
DBOB	93		30-150
BZ 198	85		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-45 D
 Client ID: NV COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 01:16

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.9	9.94	2
Acenaphthylene	ND		ug/kg	19.9	9.94	2
Acenaphthene	ND		ug/kg	19.9	9.94	2
Fluorene	ND		ug/kg	19.9	9.94	2
Phenanthrene	ND		ug/kg	19.9	9.94	2
Anthracene	ND		ug/kg	19.9	9.94	2
Fluoranthene	12.8	J	ug/kg	19.9	9.94	2
Pyrene	ND		ug/kg	19.9	9.94	2
Benz(a)anthracene	ND		ug/kg	19.9	9.94	2
Chrysene	ND		ug/kg	19.9	9.94	2
Benzo(b)fluoranthene	ND		ug/kg	19.9	9.94	2
Benzo(k)fluoranthene	ND		ug/kg	19.9	9.94	2
Benzo(a)pyrene	ND		ug/kg	19.9	9.94	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.9	9.94	2
Dibenz(a,h)anthracene	ND		ug/kg	19.9	9.94	2
Benzo(ghi)perylene	ND		ug/kg	19.9	9.94	2
Cl2-BZ#8	ND		ug/kg	1.99	0.994	2
Cl3-BZ#18	ND		ug/kg	1.99	0.994	2
Cl3-BZ#28	ND		ug/kg	1.99	0.994	2
Cl4-BZ#44	ND		ug/kg	1.99	0.994	2
Cl4-BZ#49	ND		ug/kg	1.99	0.994	2
Cl4-BZ#52	2.04		ug/kg	1.99	0.994	2
Cl4-BZ#66	ND		ug/kg	1.99	0.994	2
Cl5-BZ#87	ND		ug/kg	1.99	0.994	2
Cl5-BZ#101	ND		ug/kg	1.99	0.994	2
Cl5-BZ#105	ND		ug/kg	1.99	0.994	2
Cl5-BZ#118	ND		ug/kg	1.99	0.994	2
Cl6-BZ#128	ND		ug/kg	1.99	0.994	2
Cl6-BZ#138	ND		ug/kg	1.99	0.994	2
Cl6-BZ#153	2.07		ug/kg	1.99	0.994	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-45 D
 Client ID: NV COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.99	0.994	2
Cl7-BZ#180	ND		ug/kg	1.99	0.994	2
Cl7-BZ#183	ND		ug/kg	1.99	0.994	2
Cl7-BZ#184	ND		ug/kg	1.99	0.994	2
Cl7-BZ#187	ND		ug/kg	1.99	0.994	2
Cl8-BZ#195	ND		ug/kg	1.99	0.994	2
Cl9-BZ#206	ND		ug/kg	1.99	0.994	2
Cl10-BZ#209	ND		ug/kg	1.99	0.994	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	53		30-150
Pyrene-d10	58		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	70		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-46 D
 Client ID: NV COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 01:49

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.1	9.54	2
Acenaphthylene	ND		ug/kg	19.1	9.54	2
Acenaphthene	12.6	J	ug/kg	19.1	9.54	2
Fluorene	ND		ug/kg	19.1	9.54	2
Phenanthrene	ND		ug/kg	19.1	9.54	2
Anthracene	ND		ug/kg	19.1	9.54	2
Fluoranthene	24.0		ug/kg	19.1	9.54	2
Pyrene	15.7	J	ug/kg	19.1	9.54	2
Benz(a)anthracene	ND		ug/kg	19.1	9.54	2
Chrysene	ND		ug/kg	19.1	9.54	2
Benzo(b)fluoranthene	ND		ug/kg	19.1	9.54	2
Benzo(k)fluoranthene	ND		ug/kg	19.1	9.54	2
Benzo(a)pyrene	ND		ug/kg	19.1	9.54	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.1	9.54	2
Dibenz(a,h)anthracene	ND		ug/kg	19.1	9.54	2
Benzo(ghi)perylene	ND		ug/kg	19.1	9.54	2
Cl2-BZ#8	ND		ug/kg	1.91	0.954	2
Cl3-BZ#18	ND		ug/kg	1.91	0.954	2
Cl3-BZ#28	ND		ug/kg	1.91	0.954	2
Cl4-BZ#44	ND		ug/kg	1.91	0.954	2
Cl4-BZ#49	ND		ug/kg	1.91	0.954	2
Cl4-BZ#52	2.63		ug/kg	1.91	0.954	2
Cl4-BZ#66	ND		ug/kg	1.91	0.954	2
Cl5-BZ#87	ND		ug/kg	1.91	0.954	2
Cl5-BZ#101	ND		ug/kg	1.91	0.954	2
Cl5-BZ#105	ND		ug/kg	1.91	0.954	2
Cl5-BZ#118	ND		ug/kg	1.91	0.954	2
Cl6-BZ#128	ND		ug/kg	1.91	0.954	2
Cl6-BZ#138	1.99		ug/kg	1.91	0.954	2
Cl6-BZ#153	2.43		ug/kg	1.91	0.954	2



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-46 D
 Client ID: NV COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.91	0.954	2
CI7-BZ#180	ND		ug/kg	1.91	0.954	2
CI7-BZ#183	ND		ug/kg	1.91	0.954	2
CI7-BZ#184	ND		ug/kg	1.91	0.954	2
CI7-BZ#187	ND		ug/kg	1.91	0.954	2
CI8-BZ#195	ND		ug/kg	1.91	0.954	2
CI9-BZ#206	ND		ug/kg	1.91	0.954	2
CI10-BZ#209	ND		ug/kg	1.91	0.954	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	74		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-47 D
 Client ID: NV COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 02:22

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.4	9.19	2
Acenaphthylene	ND		ug/kg	18.4	9.19	2
Acenaphthene	11.5	J	ug/kg	18.4	9.19	2
Fluorene	ND		ug/kg	18.4	9.19	2
Phenanthrene	ND		ug/kg	18.4	9.19	2
Anthracene	ND		ug/kg	18.4	9.19	2
Fluoranthene	31.2		ug/kg	18.4	9.19	2
Pyrene	21.5		ug/kg	18.4	9.19	2
Benz(a)anthracene	ND		ug/kg	18.4	9.19	2
Chrysene	ND		ug/kg	18.4	9.19	2
Benzo(b)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(k)fluoranthene	ND		ug/kg	18.4	9.19	2
Benzo(a)pyrene	ND		ug/kg	18.4	9.19	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.4	9.19	2
Dibenz(a,h)anthracene	ND		ug/kg	18.4	9.19	2
Benzo(ghi)perylene	ND		ug/kg	18.4	9.19	2
Cl2-BZ#8	ND		ug/kg	1.84	0.919	2
Cl3-BZ#18	ND		ug/kg	1.84	0.919	2
Cl3-BZ#28	ND		ug/kg	1.84	0.919	2
Cl4-BZ#44	ND		ug/kg	1.84	0.919	2
Cl4-BZ#49	ND		ug/kg	1.84	0.919	2
Cl4-BZ#52	3.05		ug/kg	1.84	0.919	2
Cl4-BZ#66	ND		ug/kg	1.84	0.919	2
Cl5-BZ#87	ND		ug/kg	1.84	0.919	2
Cl5-BZ#101	ND		ug/kg	1.84	0.919	2
Cl5-BZ#105	ND		ug/kg	1.84	0.919	2
Cl5-BZ#118	ND		ug/kg	1.84	0.919	2
Cl6-BZ#128	ND		ug/kg	1.84	0.919	2
Cl6-BZ#138	1.05	J	ug/kg	1.84	0.919	2
Cl6-BZ#153	2.23		ug/kg	1.84	0.919	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-47 D
 Client ID: NV COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.84	0.919	2
CI7-BZ#180	ND		ug/kg	1.84	0.919	2
CI7-BZ#183	ND		ug/kg	1.84	0.919	2
CI7-BZ#184	ND		ug/kg	1.84	0.919	2
CI7-BZ#187	ND		ug/kg	1.84	0.919	2
CI8-BZ#195	ND		ug/kg	1.84	0.919	2
CI9-BZ#206	ND		ug/kg	1.84	0.919	2
CI10-BZ#209	ND		ug/kg	1.84	0.919	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	57		30-150
Benzo(b)fluoranthene-d12	50		30-150
DBOB	73		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-48 D
 Client ID: NV COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 02:54

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.3	8.66	2
Acenaphthylene	ND		ug/kg	17.3	8.66	2
Acenaphthene	11.1	J	ug/kg	17.3	8.66	2
Fluorene	ND		ug/kg	17.3	8.66	2
Phenanthrene	ND		ug/kg	17.3	8.66	2
Anthracene	ND		ug/kg	17.3	8.66	2
Fluoranthene	14.5	J	ug/kg	17.3	8.66	2
Pyrene	10.6	J	ug/kg	17.3	8.66	2
Benz(a)anthracene	ND		ug/kg	17.3	8.66	2
Chrysene	ND		ug/kg	17.3	8.66	2
Benzo(b)fluoranthene	ND		ug/kg	17.3	8.66	2
Benzo(k)fluoranthene	ND		ug/kg	17.3	8.66	2
Benzo(a)pyrene	ND		ug/kg	17.3	8.66	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.3	8.66	2
Dibenz(a,h)anthracene	ND		ug/kg	17.3	8.66	2
Benzo(ghi)perylene	ND		ug/kg	17.3	8.66	2
Cl2-BZ#8	ND		ug/kg	1.73	0.866	2
Cl3-BZ#18	ND		ug/kg	1.73	0.866	2
Cl3-BZ#28	ND		ug/kg	1.73	0.866	2
Cl4-BZ#44	ND		ug/kg	1.73	0.866	2
Cl4-BZ#49	ND		ug/kg	1.73	0.866	2
Cl4-BZ#52	ND		ug/kg	1.73	0.866	2
Cl4-BZ#66	ND		ug/kg	1.73	0.866	2
Cl5-BZ#87	ND		ug/kg	1.73	0.866	2
Cl5-BZ#101	ND		ug/kg	1.73	0.866	2
Cl5-BZ#105	ND		ug/kg	1.73	0.866	2
Cl5-BZ#118	ND		ug/kg	1.73	0.866	2
Cl6-BZ#128	ND		ug/kg	1.73	0.866	2
Cl6-BZ#138	1.16	J	ug/kg	1.73	0.866	2
Cl6-BZ#153	1.87		ug/kg	1.73	0.866	2



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-48 D
 Client ID: NV COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.73	0.866	2
Cl7-BZ#180	ND		ug/kg	1.73	0.866	2
Cl7-BZ#183	ND		ug/kg	1.73	0.866	2
Cl7-BZ#184	ND		ug/kg	1.73	0.866	2
Cl7-BZ#187	ND		ug/kg	1.73	0.866	2
Cl8-BZ#195	ND		ug/kg	1.73	0.866	2
Cl9-BZ#206	ND		ug/kg	1.73	0.866	2
Cl10-BZ#209	ND		ug/kg	1.73	0.866	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	47		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	44		30-150
DBOB	61		30-150
BZ 198	55		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-49 D
 Client ID: NV COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 11/17/17 03:27
 Analyst: GP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.6	9.29	2
Acenaphthylene	ND		ug/kg	18.6	9.29	2
Acenaphthene	ND		ug/kg	18.6	9.29	2
Fluorene	ND		ug/kg	18.6	9.29	2
Phenanthrene	ND		ug/kg	18.6	9.29	2
Anthracene	ND		ug/kg	18.6	9.29	2
Fluoranthene	14.8	J	ug/kg	18.6	9.29	2
Pyrene	10.9	J	ug/kg	18.6	9.29	2
Benz(a)anthracene	ND		ug/kg	18.6	9.29	2
Chrysene	ND		ug/kg	18.6	9.29	2
Benzo(b)fluoranthene	ND		ug/kg	18.6	9.29	2
Benzo(k)fluoranthene	ND		ug/kg	18.6	9.29	2
Benzo(a)pyrene	ND		ug/kg	18.6	9.29	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.6	9.29	2
Dibenz(a,h)anthracene	ND		ug/kg	18.6	9.29	2
Benzo(ghi)perylene	ND		ug/kg	18.6	9.29	2
Cl2-BZ#8	ND		ug/kg	1.86	0.929	2
Cl3-BZ#18	ND		ug/kg	1.86	0.929	2
Cl3-BZ#28	ND		ug/kg	1.86	0.929	2
Cl4-BZ#44	ND		ug/kg	1.86	0.929	2
Cl4-BZ#49	ND		ug/kg	1.86	0.929	2
Cl4-BZ#52	ND		ug/kg	1.86	0.929	2
Cl4-BZ#66	ND		ug/kg	1.86	0.929	2
Cl5-BZ#87	ND		ug/kg	1.86	0.929	2
Cl5-BZ#101	ND		ug/kg	1.86	0.929	2
Cl5-BZ#105	ND		ug/kg	1.86	0.929	2
Cl5-BZ#118	ND		ug/kg	1.86	0.929	2
Cl6-BZ#128	ND		ug/kg	1.86	0.929	2
Cl6-BZ#138	1.79	J	ug/kg	1.86	0.929	2
Cl6-BZ#153	2.42		ug/kg	1.86	0.929	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-49 D
 Client ID: NV COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.86	0.929	2
CI7-BZ#180	ND		ug/kg	1.86	0.929	2
CI7-BZ#183	ND		ug/kg	1.86	0.929	2
CI7-BZ#184	ND		ug/kg	1.86	0.929	2
CI7-BZ#187	ND		ug/kg	1.86	0.929	2
CI8-BZ#195	ND		ug/kg	1.86	0.929	2
CI9-BZ#206	ND		ug/kg	1.86	0.929	2
CI10-BZ#209	ND		ug/kg	1.86	0.929	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	53		30-150
Pyrene-d10	59		30-150
Benzo(b)fluoranthene-d12	51		30-150
DBOB	72		30-150
BZ 198	68		30-150

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-50 D
 Client ID: NV COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 04:00

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.7	9.34	2
Acenaphthylene	ND		ug/kg	18.7	9.34	2
Acenaphthene	10.8	J	ug/kg	18.7	9.34	2
Fluorene	ND		ug/kg	18.7	9.34	2
Phenanthrene	ND		ug/kg	18.7	9.34	2
Anthracene	ND		ug/kg	18.7	9.34	2
Fluoranthene	23.9		ug/kg	18.7	9.34	2
Pyrene	19.4		ug/kg	18.7	9.34	2
Benz(a)anthracene	ND		ug/kg	18.7	9.34	2
Chrysene	ND		ug/kg	18.7	9.34	2
Benzo(b)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(k)fluoranthene	ND		ug/kg	18.7	9.34	2
Benzo(a)pyrene	ND		ug/kg	18.7	9.34	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.7	9.34	2
Dibenz(a,h)anthracene	ND		ug/kg	18.7	9.34	2
Benzo(ghi)perylene	ND		ug/kg	18.7	9.34	2
Cl2-BZ#8	ND		ug/kg	1.87	0.934	2
Cl3-BZ#18	ND		ug/kg	1.87	0.934	2
Cl3-BZ#28	ND		ug/kg	1.87	0.934	2
Cl4-BZ#44	ND		ug/kg	1.87	0.934	2
Cl4-BZ#49	ND		ug/kg	1.87	0.934	2
Cl4-BZ#52	3.42		ug/kg	1.87	0.934	2
Cl4-BZ#66	ND		ug/kg	1.87	0.934	2
Cl5-BZ#87	ND		ug/kg	1.87	0.934	2
Cl5-BZ#101	ND		ug/kg	1.87	0.934	2
Cl5-BZ#105	ND		ug/kg	1.87	0.934	2
Cl5-BZ#118	ND		ug/kg	1.87	0.934	2
Cl6-BZ#128	ND		ug/kg	1.87	0.934	2
Cl6-BZ#138	1.16	J	ug/kg	1.87	0.934	2
Cl6-BZ#153	1.98		ug/kg	1.87	0.934	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-50 D
 Client ID: NV COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.87	0.934	2
CI7-BZ#180	ND		ug/kg	1.87	0.934	2
CI7-BZ#183	ND		ug/kg	1.87	0.934	2
CI7-BZ#184	ND		ug/kg	1.87	0.934	2
CI7-BZ#187	ND		ug/kg	1.87	0.934	2
CI8-BZ#195	ND		ug/kg	1.87	0.934	2
CI9-BZ#206	ND		ug/kg	1.87	0.934	2
CI10-BZ#209	ND		ug/kg	1.87	0.934	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	57		30-150
Pyrene-d10	63		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	77		30-150
BZ 198	67		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-51 D
 Client ID: NV COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 04:33

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	18.3	9.14	2
Acenaphthylene	ND		ug/kg	18.3	9.14	2
Acenaphthene	11.9	J	ug/kg	18.3	9.14	2
Fluorene	ND		ug/kg	18.3	9.14	2
Phenanthrene	ND		ug/kg	18.3	9.14	2
Anthracene	ND		ug/kg	18.3	9.14	2
Fluoranthene	32.6		ug/kg	18.3	9.14	2
Pyrene	24.1		ug/kg	18.3	9.14	2
Benz(a)anthracene	ND		ug/kg	18.3	9.14	2
Chrysene	ND		ug/kg	18.3	9.14	2
Benzo(b)fluoranthene	ND		ug/kg	18.3	9.14	2
Benzo(k)fluoranthene	ND		ug/kg	18.3	9.14	2
Benzo(a)pyrene	ND		ug/kg	18.3	9.14	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	18.3	9.14	2
Dibenz(a,h)anthracene	ND		ug/kg	18.3	9.14	2
Benzo(ghi)perylene	ND		ug/kg	18.3	9.14	2
Cl2-BZ#8	ND		ug/kg	1.83	0.914	2
Cl3-BZ#18	ND		ug/kg	1.83	0.914	2
Cl3-BZ#28	ND		ug/kg	1.83	0.914	2
Cl4-BZ#44	ND		ug/kg	1.83	0.914	2
Cl4-BZ#49	ND		ug/kg	1.83	0.914	2
Cl4-BZ#52	ND		ug/kg	1.83	0.914	2
Cl4-BZ#66	ND		ug/kg	1.83	0.914	2
Cl5-BZ#87	ND		ug/kg	1.83	0.914	2
Cl5-BZ#101	ND		ug/kg	1.83	0.914	2
Cl5-BZ#105	ND		ug/kg	1.83	0.914	2
Cl5-BZ#118	ND		ug/kg	1.83	0.914	2
Cl6-BZ#128	ND		ug/kg	1.83	0.914	2
Cl6-BZ#138	ND		ug/kg	1.83	0.914	2
Cl6-BZ#153	1.80	J	ug/kg	1.83	0.914	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-51 D
 Client ID: NV COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.83	0.914	2
CI7-BZ#180	ND		ug/kg	1.83	0.914	2
CI7-BZ#183	ND		ug/kg	1.83	0.914	2
CI7-BZ#184	ND		ug/kg	1.83	0.914	2
CI7-BZ#187	ND		ug/kg	1.83	0.914	2
CI8-BZ#195	ND		ug/kg	1.83	0.914	2
CI9-BZ#206	ND		ug/kg	1.83	0.914	2
CI10-BZ#209	ND		ug/kg	1.83	0.914	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	55		30-150
Pyrene-d10	62		30-150
Benzo(b)fluoranthene-d12	54		30-150
DBOB	78		30-150
BZ 198	66		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-52 D
 Client ID: NV COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 05:06

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	19.6	9.78	2
Acenaphthylene	ND		ug/kg	19.6	9.78	2
Acenaphthene	9.81	J	ug/kg	19.6	9.78	2
Fluorene	ND		ug/kg	19.6	9.78	2
Phenanthrene	ND		ug/kg	19.6	9.78	2
Anthracene	ND		ug/kg	19.6	9.78	2
Fluoranthene	33.2		ug/kg	19.6	9.78	2
Pyrene	26.1		ug/kg	19.6	9.78	2
Benz(a)anthracene	ND		ug/kg	19.6	9.78	2
Chrysene	ND		ug/kg	19.6	9.78	2
Benzo(b)fluoranthene	ND		ug/kg	19.6	9.78	2
Benzo(k)fluoranthene	ND		ug/kg	19.6	9.78	2
Benzo(a)pyrene	ND		ug/kg	19.6	9.78	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	19.6	9.78	2
Dibenz(a,h)anthracene	ND		ug/kg	19.6	9.78	2
Benzo(ghi)perylene	ND		ug/kg	19.6	9.78	2
Cl2-BZ#8	ND		ug/kg	1.96	0.978	2
Cl3-BZ#18	ND		ug/kg	1.96	0.978	2
Cl3-BZ#28	ND		ug/kg	1.96	0.978	2
Cl4-BZ#44	ND		ug/kg	1.96	0.978	2
Cl4-BZ#49	ND		ug/kg	1.96	0.978	2
Cl4-BZ#52	ND		ug/kg	1.96	0.978	2
Cl4-BZ#66	ND		ug/kg	1.96	0.978	2
Cl5-BZ#87	2.29		ug/kg	1.96	0.978	2
Cl5-BZ#101	ND		ug/kg	1.96	0.978	2
Cl5-BZ#105	ND		ug/kg	1.96	0.978	2
Cl5-BZ#118	ND		ug/kg	1.96	0.978	2
Cl6-BZ#128	ND		ug/kg	1.96	0.978	2
Cl6-BZ#138	1.44	J	ug/kg	1.96	0.978	2
Cl6-BZ#153	1.76	J	ug/kg	1.96	0.978	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-52 D
 Client ID: NV COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.96	0.978	2
CI7-BZ#180	ND		ug/kg	1.96	0.978	2
CI7-BZ#183	ND		ug/kg	1.96	0.978	2
CI7-BZ#184	ND		ug/kg	1.96	0.978	2
CI7-BZ#187	ND		ug/kg	1.96	0.978	2
CI8-BZ#195	ND		ug/kg	1.96	0.978	2
CI9-BZ#206	ND		ug/kg	1.96	0.978	2
CI10-BZ#209	ND		ug/kg	1.96	0.978	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	54		30-150
Pyrene-d10	59		30-150
Benzo(b)fluoranthene-d12	51		30-150
DBOB	72		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-53 D
 Client ID: NV COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 05:38

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	16.8	8.38	2
Acenaphthylene	ND		ug/kg	16.8	8.38	2
Acenaphthene	14.1	J	ug/kg	16.8	8.38	2
Fluorene	ND		ug/kg	16.8	8.38	2
Phenanthrene	ND		ug/kg	16.8	8.38	2
Anthracene	ND		ug/kg	16.8	8.38	2
Fluoranthene	25.5		ug/kg	16.8	8.38	2
Pyrene	18.0		ug/kg	16.8	8.38	2
Benz(a)anthracene	ND		ug/kg	16.8	8.38	2
Chrysene	ND		ug/kg	16.8	8.38	2
Benzo(b)fluoranthene	ND		ug/kg	16.8	8.38	2
Benzo(k)fluoranthene	ND		ug/kg	16.8	8.38	2
Benzo(a)pyrene	ND		ug/kg	16.8	8.38	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	16.8	8.38	2
Dibenz(a,h)anthracene	ND		ug/kg	16.8	8.38	2
Benzo(ghi)perylene	ND		ug/kg	16.8	8.38	2
Cl2-BZ#8	ND		ug/kg	1.68	0.838	2
Cl3-BZ#18	ND		ug/kg	1.68	0.838	2
Cl3-BZ#28	ND		ug/kg	1.68	0.838	2
Cl4-BZ#44	ND		ug/kg	1.68	0.838	2
Cl4-BZ#49	ND		ug/kg	1.68	0.838	2
Cl4-BZ#52	ND		ug/kg	1.68	0.838	2
Cl4-BZ#66	ND		ug/kg	1.68	0.838	2
Cl5-BZ#87	ND		ug/kg	1.68	0.838	2
Cl5-BZ#101	ND		ug/kg	1.68	0.838	2
Cl5-BZ#105	ND		ug/kg	1.68	0.838	2
Cl5-BZ#118	ND		ug/kg	1.68	0.838	2
Cl6-BZ#128	ND		ug/kg	1.68	0.838	2
Cl6-BZ#138	1.34	J	ug/kg	1.68	0.838	2
Cl6-BZ#153	1.48	J	ug/kg	1.68	0.838	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-53 D
 Client ID: NV COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.68	0.838	2
Cl7-BZ#180	ND		ug/kg	1.68	0.838	2
Cl7-BZ#183	ND		ug/kg	1.68	0.838	2
Cl7-BZ#184	ND		ug/kg	1.68	0.838	2
Cl7-BZ#187	ND		ug/kg	1.68	0.838	2
Cl8-BZ#195	ND		ug/kg	1.68	0.838	2
Cl9-BZ#206	ND		ug/kg	1.68	0.838	2
Cl10-BZ#209	ND		ug/kg	1.68	0.838	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	45		30-150
Pyrene-d10	51		30-150
Benzo(b)fluoranthene-d12	44		30-150
DBOB	61		30-150
BZ 198	57		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-54 D
 Client ID: NV COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 06:11

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.1	8.53	2
Acenaphthylene	ND		ug/kg	17.1	8.53	2
Acenaphthene	14.6	J	ug/kg	17.1	8.53	2
Fluorene	ND		ug/kg	17.1	8.53	2
Phenanthrene	ND		ug/kg	17.1	8.53	2
Anthracene	ND		ug/kg	17.1	8.53	2
Fluoranthene	27.1		ug/kg	17.1	8.53	2
Pyrene	16.7	J	ug/kg	17.1	8.53	2
Benz(a)anthracene	ND		ug/kg	17.1	8.53	2
Chrysene	ND		ug/kg	17.1	8.53	2
Benzo(b)fluoranthene	ND		ug/kg	17.1	8.53	2
Benzo(k)fluoranthene	ND		ug/kg	17.1	8.53	2
Benzo(a)pyrene	ND		ug/kg	17.1	8.53	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.1	8.53	2
Dibenz(a,h)anthracene	ND		ug/kg	17.1	8.53	2
Benzo(ghi)perylene	ND		ug/kg	17.1	8.53	2
Cl2-BZ#8	ND		ug/kg	1.71	0.853	2
Cl3-BZ#18	ND		ug/kg	1.71	0.853	2
Cl3-BZ#28	ND		ug/kg	1.71	0.853	2
Cl4-BZ#44	ND		ug/kg	1.71	0.853	2
Cl4-BZ#49	ND		ug/kg	1.71	0.853	2
Cl4-BZ#52	ND		ug/kg	1.71	0.853	2
Cl4-BZ#66	ND		ug/kg	1.71	0.853	2
Cl5-BZ#87	ND		ug/kg	1.71	0.853	2
Cl5-BZ#101	ND		ug/kg	1.71	0.853	2
Cl5-BZ#105	ND		ug/kg	1.71	0.853	2
Cl5-BZ#118	ND		ug/kg	1.71	0.853	2
Cl6-BZ#128	ND		ug/kg	1.71	0.853	2
Cl6-BZ#138	1.27	J	ug/kg	1.71	0.853	2
Cl6-BZ#153	1.70	J	ug/kg	1.71	0.853	2



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-54 D
 Client ID: NV COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.71	0.853	2
CI7-BZ#180	ND		ug/kg	1.71	0.853	2
CI7-BZ#183	ND		ug/kg	1.71	0.853	2
CI7-BZ#184	ND		ug/kg	1.71	0.853	2
CI7-BZ#187	ND		ug/kg	1.71	0.853	2
CI8-BZ#195	ND		ug/kg	1.71	0.853	2
CI9-BZ#206	ND		ug/kg	1.71	0.853	2
CI10-BZ#209	ND		ug/kg	1.71	0.853	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	52		30-150
Pyrene-d10	55		30-150
Benzo(b)fluoranthene-d12	48		30-150
DBOB	75		30-150
BZ 198	64		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-55 D
 Client ID: NV COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Matrix: Tissue
 Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 10/27/17 17:15

Analytical Date: 11/17/17 06:44

Cleanup Method: EPA 3630

Analyst: GP

Cleanup Date: 11/01/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	17.7	8.83	2
Acenaphthylene	ND		ug/kg	17.7	8.83	2
Acenaphthene	16.2	J	ug/kg	17.7	8.83	2
Fluorene	ND		ug/kg	17.7	8.83	2
Phenanthrene	ND		ug/kg	17.7	8.83	2
Anthracene	ND		ug/kg	17.7	8.83	2
Fluoranthene	49.1		ug/kg	17.7	8.83	2
Pyrene	36.2		ug/kg	17.7	8.83	2
Benz(a)anthracene	ND		ug/kg	17.7	8.83	2
Chrysene	ND		ug/kg	17.7	8.83	2
Benzo(b)fluoranthene	ND		ug/kg	17.7	8.83	2
Benzo(k)fluoranthene	ND		ug/kg	17.7	8.83	2
Benzo(a)pyrene	ND		ug/kg	17.7	8.83	2
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	17.7	8.83	2
Dibenz(a,h)anthracene	ND		ug/kg	17.7	8.83	2
Benzo(ghi)perylene	ND		ug/kg	17.7	8.83	2
Cl2-BZ#8	ND		ug/kg	1.77	0.883	2
Cl3-BZ#18	ND		ug/kg	1.77	0.883	2
Cl3-BZ#28	ND		ug/kg	1.77	0.883	2
Cl4-BZ#44	ND		ug/kg	1.77	0.883	2
Cl4-BZ#49	ND		ug/kg	1.77	0.883	2
Cl4-BZ#52	4.30		ug/kg	1.77	0.883	2
Cl4-BZ#66	ND		ug/kg	1.77	0.883	2
Cl5-BZ#87	ND		ug/kg	1.77	0.883	2
Cl5-BZ#101	ND		ug/kg	1.77	0.883	2
Cl5-BZ#105	ND		ug/kg	1.77	0.883	2
Cl5-BZ#118	ND		ug/kg	1.77	0.883	2
Cl6-BZ#128	ND		ug/kg	1.77	0.883	2
Cl6-BZ#138	1.84		ug/kg	1.77	0.883	2
Cl6-BZ#153	1.93		ug/kg	1.77	0.883	2



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-55 D
 Client ID: NV COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
CI7-BZ#170	ND		ug/kg	1.77	0.883	2
CI7-BZ#180	ND		ug/kg	1.77	0.883	2
CI7-BZ#183	ND		ug/kg	1.77	0.883	2
CI7-BZ#184	ND		ug/kg	1.77	0.883	2
CI7-BZ#187	ND		ug/kg	1.77	0.883	2
CI8-BZ#195	ND		ug/kg	1.77	0.883	2
CI9-BZ#206	ND		ug/kg	1.77	0.883	2
CI10-BZ#209	ND		ug/kg	1.77	0.883	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	59		30-150
Pyrene-d10	63		30-150
Benzo(b)fluoranthene-d12	55		30-150
DBOB	81		30-150
BZ 198	74		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/07/17 16:34

Extraction Date: 10/27/17 12:30

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 10/30/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-20 Batch: WG1057014-1					
Naphthalene	ND		ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	ND		ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	ND		ug/kg	1.00	0.500
Cl3-BZ#18	ND		ug/kg	1.00	0.500
Cl3-BZ#28	ND		ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	ND		ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 11/07/17 16:34

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 10/27/17 12:30

Cleanup Method: EPA 3630

Cleanup Date: 10/30/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01-20 Batch: WG1057014-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	74		30-150
Pyrene-d10	82		30-150
Benzo(b)fluoranthene-d12	76		30-150
DBOB	83		30-150
BZ 198	81		30-150



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/15/17 00:46

Extraction Date: 10/27/17 13:30

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 11/02/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 21-40 Batch: WG1057021-1					
Naphthalene	ND		ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	ND		ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	0.707	J	ug/kg	1.00	0.500
Cl3-BZ#18	1.28		ug/kg	1.00	0.500
Cl3-BZ#28	0.813	J	ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	0.572	J	ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/15/17 00:46

Extraction Date: 10/27/17 13:30

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 11/02/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 21-40 Batch: WG1057021-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	83		30-150
Pyrene-d10	97		30-150
Benzo(b)fluoranthene-d12	90		30-150
DBOB	92		30-150
BZ 198	87		30-150

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Extraction Method: EPA 3570

Analytical Date: 11/16/17 18:14

Extraction Date: 10/27/17 17:15

Analyst: GP

Cleanup Method: EPA 3630

Cleanup Date: 11/01/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 41-55 Batch: WG1057028-1					
Naphthalene	5.87	J	ug/kg	10.0	5.00
Acenaphthylene	ND		ug/kg	10.0	5.00
Acenaphthene	8.97	J	ug/kg	10.0	5.00
Fluorene	ND		ug/kg	10.0	5.00
Phenanthrene	ND		ug/kg	10.0	5.00
Anthracene	ND		ug/kg	10.0	5.00
Fluoranthene	ND		ug/kg	10.0	5.00
Pyrene	ND		ug/kg	10.0	5.00
Benz(a)anthracene	ND		ug/kg	10.0	5.00
Chrysene	ND		ug/kg	10.0	5.00
Benzo(b)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(k)fluoranthene	ND		ug/kg	10.0	5.00
Benzo(a)pyrene	ND		ug/kg	10.0	5.00
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	10.0	5.00
Dibenz(a,h)anthracene	ND		ug/kg	10.0	5.00
Benzo(ghi)perylene	ND		ug/kg	10.0	5.00
Cl2-BZ#8	ND		ug/kg	1.00	0.500
Cl3-BZ#18	ND		ug/kg	1.00	0.500
Cl3-BZ#28	ND		ug/kg	1.00	0.500
Cl4-BZ#44	ND		ug/kg	1.00	0.500
Cl4-BZ#49	ND		ug/kg	1.00	0.500
Cl4-BZ#52	ND		ug/kg	1.00	0.500
Cl4-BZ#66	ND		ug/kg	1.00	0.500
Cl5-BZ#87	ND		ug/kg	1.00	0.500
Cl5-BZ#101	ND		ug/kg	1.00	0.500
Cl5-BZ#105	ND		ug/kg	1.00	0.500
Cl5-BZ#118	ND		ug/kg	1.00	0.500
Cl6-BZ#128	ND		ug/kg	1.00	0.500
Cl6-BZ#138	ND		ug/kg	1.00	0.500

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)

Analytical Date: 11/16/17 18:14

Analyst: GP

Extraction Method: EPA 3570

Extraction Date: 10/27/17 17:15

Cleanup Method: EPA 3630

Cleanup Date: 11/01/17

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 41-55 Batch: WG1057028-1					
Cl6-BZ#153	ND		ug/kg	1.00	0.500
Cl7-BZ#170	ND		ug/kg	1.00	0.500
Cl7-BZ#180	ND		ug/kg	1.00	0.500
Cl7-BZ#183	ND		ug/kg	1.00	0.500
Cl7-BZ#184	ND		ug/kg	1.00	0.500
Cl7-BZ#187	ND		ug/kg	1.00	0.500
Cl8-BZ#195	ND		ug/kg	1.00	0.500
Cl9-BZ#206	ND		ug/kg	1.00	0.500
Cl10-BZ#209	ND		ug/kg	1.00	0.500

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		30-150
Pyrene-d10	88		30-150
Benzo(b)fluoranthene-d12	80		30-150
DBOB	99		30-150
BZ 198	87		30-150



Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 Batch: WG1057014-2 WG1057014-3								
Naphthalene	84		75		50-120	11		30
Acenaphthylene	75		67		50-120	11		30
Acenaphthene	75		67		50-120	11		30
Fluorene	72		65		50-120	10		30
Phenanthrene	80		73		50-120	9		30
Anthracene	79		72		50-120	9		30
Fluoranthene	79		73		50-120	8		30
Pyrene	78		72		50-120	8		30
Benz(a)anthracene	92		85		50-120	8		30
Chrysene	76		71		50-120	7		30
Benzo(b)fluoranthene	96		88		50-120	9		30
Benzo(k)fluoranthene	69		62		50-120	11		30
Benzo(a)pyrene	81		73		50-120	10		30
Indeno(1,2,3-cd)Pyrene	88		78		50-120	12		30
Dibenz(a,h)anthracene	86		79		50-120	8		30
Benzo(ghi)perylene	89		81		50-120	9		30
Cl2-BZ#8	78		72		50-120	8		30
Cl3-BZ#18	77		71		50-120	8		30
Cl3-BZ#28	79		74		50-120	7		30
Cl4-BZ#44	83		77		50-120	8		30
Cl4-BZ#49	77		72		50-120	7		30
Cl4-BZ#52	85		78		50-120	9		30
Cl4-BZ#66	84		79		50-120	6		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 Batch: WG1057014-2 WG1057014-3								
Cl5-BZ#87	82		77		50-120	6		30
Cl5-BZ#101	84		78		50-120	7		30
Cl5-BZ#105	82		78		50-120	5		30
Cl5-BZ#118	81		76		50-120	6		30
Cl6-BZ#128	84		80		50-120	5		30
Cl6-BZ#138	85		80		50-120	6		30
Cl6-BZ#153	85		80		50-120	6		30
Cl7-BZ#170	87		83		50-120	5		30
Cl7-BZ#180	79		74		50-120	7		30
Cl7-BZ#183	74		72		50-120	3		30
Cl7-BZ#184	80		76		50-120	5		30
Cl7-BZ#187	85		78		50-120	9		30
Cl8-BZ#195	89		84		50-120	6		30
Cl9-BZ#206	90		86		50-120	5		30
Cl10-BZ#209	87		83		50-120	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	82		71		30-150
Pyrene-d10	90		80		30-150
Benzo(b)fluoranthene-d12	87		77		30-150
DBOB	95		82		30-150
BZ 198	88		81		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 Batch: WG1057021-2 WG1057021-3								
Naphthalene	75		79		50-120	5		30
Acenaphthylene	77		80		50-120	4		30
Acenaphthene	74		78		50-120	5		30
Fluorene	77		81		50-120	5		30
Phenanthrene	81		82		50-120	1		30
Anthracene	79		81		50-120	3		30
Fluoranthene	81		82		50-120	1		30
Pyrene	76		78		50-120	3		30
Benz(a)anthracene	83		86		50-120	4		30
Chrysene	82		84		50-120	2		30
Benzo(b)fluoranthene	92		94		50-120	2		30
Benzo(k)fluoranthene	72		77		50-120	7		30
Benzo(a)pyrene	83		86		50-120	4		30
Indeno(1,2,3-cd)Pyrene	84		86		50-120	2		30
Dibenz(a,h)anthracene	83		85		50-120	2		30
Benzo(ghi)perylene	86		88		50-120	2		30
Cl2-BZ#8	76		78		50-120	3		30
Cl3-BZ#18	76		78		50-120	3		30
Cl3-BZ#28	77		79		50-120	3		30
Cl4-BZ#44	79		80		50-120	1		30
Cl4-BZ#49	78		80		50-120	3		30
Cl4-BZ#52	73		75		50-120	3		30
Cl4-BZ#66	77		79		50-120	3		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 Batch: WG1057021-2 WG1057021-3								
Cl5-BZ#87	78		80		50-120	3		30
Cl5-BZ#101	77		80		50-120	4		30
Cl5-BZ#105	77		79		50-120	3		30
Cl5-BZ#118	75		77		50-120	3		30
Cl6-BZ#128	80		83		50-120	4		30
Cl6-BZ#138	78		79		50-120	1		30
Cl6-BZ#153	81		83		50-120	2		30
Cl7-BZ#170	79		81		50-120	3		30
Cl7-BZ#180	76		78		50-120	3		30
Cl7-BZ#183	76		78		50-120	3		30
Cl7-BZ#184	78		80		50-120	3		30
Cl7-BZ#187	76		78		50-120	3		30
Cl8-BZ#195	79		82		50-120	4		30
Cl9-BZ#206	78		79		50-120	1		30
Cl10-BZ#209	78		79		50-120	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	76		79		30-150
Pyrene-d10	85		85		30-150
Benzo(b)fluoranthene-d12	82		82		30-150
DBOB	85		86		30-150
BZ 198	84		84		30-150

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 Batch: WG1057028-2 WG1057028-3								
Naphthalene	70		62		50-120	12		30
Acenaphthylene	72		63		50-120	13		30
Acenaphthene	72		65		50-120	10		30
Fluorene	73		66		50-120	10		30
Phenanthrene	77		72		50-120	7		30
Anthracene	77		74		50-120	4		30
Fluoranthene	80		76		50-120	5		30
Pyrene	73		69		50-120	6		30
Benz(a)anthracene	82		78		50-120	5		30
Chrysene	80		77		50-120	4		30
Benzo(b)fluoranthene	77		73		50-120	5		30
Benzo(k)fluoranthene	78		76		50-120	3		30
Benzo(a)pyrene	84		81		50-120	4		30
Indeno(1,2,3-cd)Pyrene	83		81		50-120	2		30
Dibenz(a,h)anthracene	83		80		50-120	4		30
Benzo(ghi)perylene	86		82		50-120	5		30
Cl2-BZ#8	67		62		50-120	8		30
Cl3-BZ#18	73		62		50-120	16		30
Cl3-BZ#28	69		65		50-120	6		30
Cl4-BZ#44	72		69		50-120	4		30
Cl4-BZ#49	72		69		50-120	4		30
Cl4-BZ#52	65		62		50-120	5		30
Cl4-BZ#66	69		67		50-120	3		30

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 Batch: WG1057028-2 WG1057028-3								
Cl5-BZ#87	72		70		50-120	3		30
Cl5-BZ#101	72		69		50-120	4		30
Cl5-BZ#105	76		73		50-120	4		30
Cl5-BZ#118	70		68		50-120	3		30
Cl6-BZ#128	76		73		50-120	4		30
Cl6-BZ#138	73		71		50-120	3		30
Cl6-BZ#153	77		73		50-120	5		30
Cl7-BZ#170	78		75		50-120	4		30
Cl7-BZ#180	73		70		50-120	4		30
Cl7-BZ#183	74		71		50-120	4		30
Cl7-BZ#184	75		72		50-120	4		30
Cl7-BZ#187	73		70		50-120	4		30
Cl8-BZ#195	80		77		50-120	4		30
Cl9-BZ#206	80		78		50-120	3		30
Cl10-BZ#209	80		78		50-120	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	73		64		30-150
Pyrene-d10	84		79		30-150
Benzo(b)fluoranthene-d12	76		71		30-150
DBOB	93		84		30-150
BZ 198	82		77		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NV NATIVE BACKGROUND REP A Associated sample(s): 01-20 QC Batch ID: WG1057014-6 WG1057014-7 QC Sample: L1735250-01 Client												
Naphthalene	5.46J	489	312	64		334	69		50-120	7		30
Acenaphthylene	ND	489	277	57		299	62		50-120	8		30
Acenaphthene	ND	489	273	56		294	61		50-120	7		30
Fluorene	ND	489	265	54		290	60		50-120	9		30
Phenanthrene	7.86J	489	329	67		359	74		50-120	9		30
Anthracene	ND	489	268	55		287	60		50-120	7		30
Fluoranthene	ND	489	286	59		312	65		50-120	9		30
Pyrene	ND	489	266	54		280	58		50-120	5		30
Benz(a)anthracene	ND	489	312	64		337	70		50-120	8		30
Chrysene	ND	489	286	59		324	67		50-120	12		30
Benzo(b)fluoranthene	ND	489	326	67		331	69		50-120	2		30
Benzo(k)fluoranthene	ND	489	277	57		324	67		50-120	16		30
Benzo(a)pyrene	ND	489	328	67		357	74		50-120	8		30
Indeno(1,2,3-cd)Pyrene	8.89J	489	331	68		369	77		50-120	11		30
Dibenz(a,h)anthracene	ND	489	319	65		348	72		50-120	9		30
Benzo(ghi)perylene	ND	489	330	68		360	75		50-120	9		30
Cl2-BZ#8	ND	97.8	54.8	56		54.3	56		50-120	1		30
Cl3-BZ#18	ND	97.8	163	167	Q	139	144	Q	50-120	16		30
Cl3-BZ#28	ND	97.8	80.5	82		81.2	84		50-120	1		30
Cl4-BZ#44	ND	97.8	54.9	56		53.9	56		50-120	2		30
Cl4-BZ#49	ND	97.8	48.4	50	Q	48.0	50	Q	50-120	1		30
Cl4-BZ#52	ND	97.8	61.5	63		52.0	54		50-120	17		30
Cl4-BZ#66	ND	97.8	55.0	56		56.6	59		50-120	3		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NV NATIVE BACKGROUND REP A												
Associated sample(s): 01-20				QC Batch ID: WG1057014-6		WG1057014-7		QC Sample: L1735250-01		Client		
CI5-BZ#87	ND	97.8	56.0	57		58.9	61		50-120	5		30
CI5-BZ#101	0.812J	97.8	78.6	80		75.3	78		50-120	4		30
CI5-BZ#105	ND	97.8	66.3	68		78.2	81		50-120	16		30
CI5-BZ#118	0.506J	97.8	58.0	59		59.9	62		50-120	3		30
CI6-BZ#128	ND	97.8	60.5	62		62.9	65		50-120	4		30
CI6-BZ#138	0.585J	97.8	61.4	63		64.8	67		50-120	5		30
CI6-BZ#153	0.812J	97.8	69.9	71		66.3	69		50-120	5		30
CI7-BZ#170	ND	97.8	62.4	64		64.3	67		50-120	3		30
CI7-BZ#180	ND	97.8	58.9	60		62.0	64		50-120	5		30
CI7-BZ#183	ND	97.8	56.3	58		59.2	61		50-120	5		30
CI7-BZ#184	ND	97.8	66.8	68		64.9	67		50-120	3		30
CI7-BZ#187	ND	97.8	62.4	64		63.8	66		50-120	2		30
CI8-BZ#195	ND	97.8	63.3	65		65.2	68		50-120	3		30
CI9-BZ#206	ND	97.8	65.7	67		68.4	71		50-120	4		30
CI10-BZ#209	ND	97.8	63.3	65		64.2	67		50-120	1		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	61		63		30-150
BZ 198	67		69		30-150
Benzo(b)fluoranthene-d12	63		65		30-150
DBOB	71		78		30-150
Pyrene-d10	62		62		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NV COMPOSITE 2 REP A Associated sample(s): 21-40 QC Batch ID: WG1057021-6 WG1057021-7 QC Sample: L1735250-21 Client												
Naphthalene	ND	436	150	34	Q	185	41	Q	50-120	21		30
Acenaphthylene	ND	436	155	36	Q	187	41	Q	50-120	19		30
Acenaphthene	ND	436	145	33	Q	176	39	Q	50-120	19		30
Fluorene	ND	436	152	35	Q	183	41	Q	50-120	19		30
Phenanthrene	ND	436	208	48	Q	277	61		50-120	28		30
Anthracene	ND	436	166	38	Q	201	45	Q	50-120	19		30
Fluoranthene	ND	436	194	45	Q	258	57		50-120	28		30
Pyrene	ND	436	190	44	Q	225	50	Q	50-120	17		30
Benz(a)anthracene	ND	436	233	53		293	65		50-120	23		30
Chrysene	ND	436	174	40	Q	201	45	Q	50-120	14		30
Benzo(b)fluoranthene	ND	436	207	47	Q	253	56		50-120	20		30
Benzo(k)fluoranthene	ND	436	161	37	Q	194	43	Q	50-120	19		30
Benzo(a)pyrene	ND	436	171	39	Q	198	44	Q	50-120	15		30
Indeno(1,2,3-cd)Pyrene	ND	436	212	49	Q	259	57		50-120	20		30
Dibenz(a,h)anthracene	ND	436	195	45	Q	237	53		50-120	19		30
Benzo(ghi)perylene	ND	436	202	46	Q	246	55		50-120	20		30
Cl2-BZ#8	ND	87.3	32.8	38	Q	41.9	46	Q	50-120	24		30
Cl3-BZ#18	ND	87.3	52.2	60		65.4	73		50-120	22		30
Cl3-BZ#28	ND	87.3	37.8	43	Q	47.2	52		50-120	22		30
Cl4-BZ#44	ND	87.3	34.6	40	Q	44.4	49	Q	50-120	25		30
Cl4-BZ#49	ND	87.3	27.5	32	Q	35.3	39	Q	50-120	25		30
Cl4-BZ#52	ND	87.3	39.2	45	Q	54.4	60		50-120	32	Q	30
Cl4-BZ#66	ND	87.3	34.3	39	Q	45.0	50	Q	50-120	27		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NV COMPOSITE 2 REP A Associated sample(s): 21-40 QC Batch ID: WG1057021-6 WG1057021-7 QC Sample: L1735250-21 Client												
CI5-BZ#87	ND	87.3	35.0	40	Q	45.6	51		50-120	26		30
CI5-BZ#101	ND	87.3	38.6	44	Q	52.8	59		50-120	31	Q	30
CI5-BZ#105	ND	87.3	31.3	36	Q	39.7	44	Q	50-120	24		30
CI5-BZ#118	ND	87.3	33.8	39	Q	44.3	49	Q	50-120	27		30
CI6-BZ#128	ND	87.3	37.1	43	Q	48.7	54		50-120	27		30
CI6-BZ#138	ND	87.3	35.8	41	Q	46.8	52		50-120	27		30
CI6-BZ#153	ND	87.3	40.1	46	Q	54.0	60		50-120	30		30
CI7-BZ#170	ND	87.3	36.9	42	Q	48.5	54		50-120	27		30
CI7-BZ#180	ND	87.3	35.2	40	Q	45.2	50		50-120	25		30
CI7-BZ#183	ND	87.3	29.8	34	Q	37.7	42	Q	50-120	23		30
CI7-BZ#184	ND	87.3	37.5	43	Q	52.3	58		50-120	33	Q	30
CI7-BZ#187	ND	87.3	40.2	46	Q	54.2	60		50-120	30		30
CI8-BZ#195	ND	87.3	37.2	43	Q	48.4	54		50-120	26		30
CI9-BZ#206	ND	87.3	37.2	43	Q	48.6	54		50-120	27		30
CI10-BZ#209	ND	87.3	37.3	43	Q	47.7	53		50-120	24		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	36		42		30-150
BZ 198	45		54		30-150
Benzo(b)fluoranthene-d12	40		47		30-150
DBOB	54		58		30-150
Pyrene-d10	48		55		30-150

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab ID: NV COMPOSITE 6 REP A Associated sample(s): 41-55 QC Batch ID: WG1057028-6 WG1057028-7 QC Sample: L1735250-41 Client												
Naphthalene	ND	472	234	50	Q	257	57		50-120	9		30
Acenaphthylene	ND	472	239	51		255	56		50-120	6		30
Acenaphthene	ND	472	236	50	Q	256	57		50-120	8		30
Fluorene	ND	472	240	51		259	57		50-120	8		30
Phenanthrene	ND	472	279	59		307	68		50-120	10		30
Anthracene	ND	472	232	49	Q	244	54		50-120	5		30
Fluoranthene	20.3	472	280	55		304	63		50-120	8		30
Pyrene	15.2J	472	255	54		277	61		50-120	8		30
Benz(a)anthracene	ND	472	291	62		319	71		50-120	9		30
Chrysene	ND	472	234	50	Q	250	55		50-120	7		30
Benzo(b)fluoranthene	ND	472	263	56		304	67		50-120	14		30
Benzo(k)fluoranthene	ND	472	229	49	Q	229	51		50-120	0		30
Benzo(a)pyrene	ND	472	265	56		295	65		50-120	11		30
Indeno(1,2,3-cd)Pyrene	ND	472	260	55		288	64		50-120	10		30
Dibenz(a,h)anthracene	ND	472	261	55		286	63		50-120	9		30
Benzo(ghi)perylene	ND	472	263	56		287	64		50-120	9		30
Cl2-BZ#8	ND	94.5	47.2	50	Q	51.0	56		50-120	8		30
Cl3-BZ#18	ND	94.5	75.1	80		79.3	88		50-120	5		30
Cl3-BZ#28	ND	94.5	52.3	55		56.8	63		50-120	8		30
Cl4-BZ#44	ND	94.5	52.8	56		55.4	61		50-120	5		30
Cl4-BZ#49	ND	94.5	43.7	46	Q	44.0	49	Q	50-120	1		30
Cl4-BZ#52	2.20	94.5	53.0	54		64.8	69		50-120	20		30
Cl4-BZ#66	ND	94.5	50.4	53		54.4	60		50-120	8		30

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057028-6 WG1057028-7 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A												
CI5-BZ#87	ND	94.5	51.0	54		57.1	63		50-120	11		30
CI5-BZ#101	1.47J	94.5	56.2	60		63.5	70		50-120	12		30
CI5-BZ#105	ND	94.5	52.4	55		55.2	61		50-120	5		30
CI5-BZ#118	ND	94.5	48.8	52		53.6	59		50-120	9		30
CI6-BZ#128	ND	94.5	51.6	55		58.3	65		50-120	12		30
CI6-BZ#138	ND	94.5	51.6	55		56.2	62		50-120	9		30
CI6-BZ#153	0.923J	94.5	59.2	63		65.1	72		50-120	9		30
CI7-BZ#170	ND	94.5	53.0	56		57.8	64		50-120	9		30
CI7-BZ#180	ND	94.5	49.9	53		54.3	60		50-120	8		30
CI7-BZ#183	ND	94.5	43.2	46	Q	48.1	53		50-120	11		30
CI7-BZ#184	ND	94.5	55.8	59		62.6	69		50-120	11		30
CI7-BZ#187	ND	94.5	57.9	61		62.1	69		50-120	7		30
CI8-BZ#195	ND	94.5	54.0	57		58.1	64		50-120	7		30
CI9-BZ#206	ND	94.5	55.0	58		59.1	65		50-120	7		30
CI10-BZ#209	ND	94.5	54.2	57		58.1	64		50-120	7		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	50		55		30-150
BZ 198	61		71		30-150
Benzo(b)fluoranthene-d12	47		54		30-150
DBOB	65		73		30-150
Pyrene-d10	54		61		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057014-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
Naphthalene	5.46J	5.78J	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	7.86J	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	ND	ND	ug/kg	NC		30
Pyrene	ND	ND	ug/kg	NC		30
Benz(a)anthracene	ND	ND	ug/kg	NC		30
Chrysene	ND	ND	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	8.89J	8.55J	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057014-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
CI4-BZ#52	ND	ND	ug/kg	NC		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	0.812J	0.640J	ug/kg	NC		30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	0.506J	0.665J	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	0.585J	0.577J	ug/kg	NC		30
CI6-BZ#153	0.812J	0.899J	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	50		64		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057014-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	51		67		30-150
Benzo(b)fluoranthene-d12	49		64		30-150
DBOB	54		73		30-150
BZ 198	49		68		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057021-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	ND	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	ND	ND	ug/kg	NC		30
Pyrene	ND	ND	ug/kg	NC		30
Benz(a)anthracene	ND	ND	ug/kg	NC		30
Chrysene	ND	ND	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	ND	ND	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057021-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Cl4-BZ#52	ND	ND	ug/kg	NC		30
Cl4-BZ#66	ND	ND	ug/kg	NC		30
Cl5-BZ#87	ND	ND	ug/kg	NC		30
Cl5-BZ#101	ND	ND	ug/kg	NC		30
Cl5-BZ#105	ND	ND	ug/kg	NC		30
Cl5-BZ#118	ND	ND	ug/kg	NC		30
Cl6-BZ#128	ND	ND	ug/kg	NC		30
Cl6-BZ#138	ND	ND	ug/kg	NC		30
Cl6-BZ#153	ND	0.934J	ug/kg	NC		30
Cl7-BZ#170	ND	ND	ug/kg	NC		30
Cl7-BZ#180	ND	ND	ug/kg	NC		30
Cl7-BZ#183	ND	ND	ug/kg	NC		30
Cl7-BZ#184	ND	ND	ug/kg	NC		30
Cl7-BZ#187	ND	ND	ug/kg	NC		30
Cl8-BZ#195	ND	ND	ug/kg	NC		30
Cl9-BZ#206	ND	ND	ug/kg	NC		30
Cl10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	41		40		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057021-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	55		53		30-150
Benzo(b)fluoranthene-d12	44		43		30-150
DBOB	58		60		30-150
BZ 198	52		51		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057028-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	ND	ND	ug/kg	NC		30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	ND	ug/kg	NC		30
Phenanthrene	ND	ND	ug/kg	NC		30
Anthracene	ND	ND	ug/kg	NC		30
Fluoranthene	20.3	16.4J	ug/kg	NC		30
Pyrene	15.2J	13.0J	ug/kg	NC		30
Benz(a)anthracene	ND	ND	ug/kg	NC		30
Chrysene	ND	ND	ug/kg	NC		30
Benzo(b)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(k)fluoranthene	ND	ND	ug/kg	NC		30
Benzo(a)pyrene	ND	ND	ug/kg	NC		30
Indeno(1,2,3-cd)Pyrene	ND	ND	ug/kg	NC		30
Dibenz(a,h)anthracene	ND	ND	ug/kg	NC		30
Benzo(ghi)perylene	ND	ND	ug/kg	NC		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30
Cl4-BZ#44	ND	ND	ug/kg	NC		30
Cl4-BZ#49	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057028-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						
CI4-BZ#52	2.20	1.89	ug/kg	15		30
CI4-BZ#66	ND	ND	ug/kg	NC		30
CI5-BZ#87	ND	ND	ug/kg	NC		30
CI5-BZ#101	1.47J	1.10J	ug/kg	NC		30
CI5-BZ#105	ND	ND	ug/kg	NC		30
CI5-BZ#118	ND	ND	ug/kg	NC		30
CI6-BZ#128	ND	ND	ug/kg	NC		30
CI6-BZ#138	ND	ND	ug/kg	NC		30
CI6-BZ#153	0.923J	0.938J	ug/kg	NC		30
CI7-BZ#170	ND	ND	ug/kg	NC		30
CI7-BZ#180	ND	ND	ug/kg	NC		30
CI7-BZ#183	ND	ND	ug/kg	NC		30
CI7-BZ#184	ND	ND	ug/kg	NC		30
CI7-BZ#187	ND	ND	ug/kg	NC		30
CI8-BZ#195	ND	ND	ug/kg	NC		30
CI9-BZ#206	ND	ND	ug/kg	NC		30
CI10-BZ#209	ND	ND	ug/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	40		34		30-150

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057028-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pyrene-d10	42		37		30-150
Benzo(b)fluoranthene-d12	37		32		30-150
DBOB	49		44		30-150
BZ 198	46		41		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057014-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	61		40-140
Fluoranthene	64		40-140
Pyrene	64		40-140
Chrysene	42		40-140
Cl3-BZ#28	70		40-140
Cl4-BZ#44	45		40-140
Cl4-BZ#49	48		40-140
Cl4-BZ#52	76		40-140
Cl4-BZ#66	56		40-140
Cl5-BZ#87	40		40-140
Cl5-BZ#101	59		40-140
Cl5-BZ#105	72		40-140
Cl5-BZ#118	69		40-140
Cl6-BZ#138	116		40-140
Cl6-BZ#153	73		40-140
Cl7-BZ#187	64		40-140
2-Methylnaphthalene-d10 (Surrogate)	62		75-125
Pyrene-d10 (Surrogate)	67		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	63		75-125
DBOB (Surrogate)	70		75-125
BZ 198 (Surrogate)	64		75-125

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057021-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	54		40-140
Fluoranthene	68		40-140
Pyrene	69		40-140
Chrysene	46		40-140
Cl3-BZ#28	112		40-140
Cl4-BZ#44	125		40-140
Cl4-BZ#49	55		40-140
Cl4-BZ#52	62		40-140
Cl4-BZ#66	64		40-140
Cl5-BZ#87	63		40-140
Cl5-BZ#101	44		40-140
Cl5-BZ#105	66		40-140
Cl5-BZ#118	69		40-140
Cl6-BZ#138	71		40-140
Cl6-BZ#153	92		40-140
Cl7-BZ#187	45		40-140
2-Methylnaphthalene-d10 (Surrogate)	65		75-125
Pyrene-d10 (Surrogate)	71		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	81		75-125
DBOB (Surrogate)	74		75-125
BZ 198 (Surrogate)	66		75-125

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057028-4

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	56		40-140
Fluoranthene	57		40-140
Pyrene	56		40-140
Chrysene	52		40-140
Cl3-BZ#28	135		40-140
Cl4-BZ#44	69		40-140
Cl4-BZ#49	55		40-140
Cl4-BZ#52	46		40-140
Cl4-BZ#66	54		40-140
Cl5-BZ#87	49		40-140
Cl5-BZ#101	45		40-140
Cl5-BZ#105	74		40-140
Cl5-BZ#118	52		40-140
Cl6-BZ#138	62		40-140
Cl6-BZ#153	63		40-140
Cl7-BZ#187	41		40-140
2-Methylnaphthalene-d10 (Surrogate)	57		75-125
Pyrene-d10 (Surrogate)	61		75-125
Benzo(b)fluoranthene-d12 (Surrogate)	54		75-125
DBOB (Surrogate)	68		75-125
BZ 198 (Surrogate)	59		75-125

PESTICIDES

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-01
 Client ID: NV NATIVE BACKGROUND REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 18:03
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.931	0.931	1	A
gamma-BHC	ND		ug/kg	0.466	0.466	1	A
Heptachlor	ND		ug/kg	0.466	0.466	1	A
Aldrin	ND		ug/kg	0.466	0.466	1	A
Heptachlor epoxide	ND		ug/kg	0.931	0.931	1	B
Oxychlordane	ND		ug/kg	0.931	0.931	1	B
trans-Chlordane	ND		ug/kg	0.466	0.466	1	A
Endosulfan I	ND		ug/kg	0.466	0.466	1	A
cis-Chlordane	ND		ug/kg	0.466	0.466	1	A
trans-Nonachlor	ND		ug/kg	0.466	0.466	1	A
4,4'-DDE	ND		ug/kg	0.466	0.466	1	A
Dieldrin	ND		ug/kg	0.466	0.466	1	A
Endrin	ND		ug/kg	0.466	0.466	1	A
Endosulfan II	ND		ug/kg	0.466	0.466	1	A
4,4'-DDD	ND		ug/kg	0.466	0.466	1	A
cis-Nonachlor	ND		ug/kg	0.466	0.466	1	A
4,4'-DDT	ND		ug/kg	0.466	0.466	1	A
Methoxychlor	ND		ug/kg	4.66	4.66	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	51		30-150	A
BZ 198	59		30-150	A
DBOB	36		30-150	B
BZ 198	53		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-02
 Client ID: NV NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 22:01
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.996	0.996	1	A
gamma-BHC	ND		ug/kg	0.498	0.498	1	A
Heptachlor	ND		ug/kg	0.498	0.498	1	B
Aldrin	ND		ug/kg	0.498	0.498	1	A
Heptachlor epoxide	ND		ug/kg	0.996	0.996	1	B
Oxychlordane	ND		ug/kg	0.996	0.996	1	B
trans-Chlordane	ND		ug/kg	0.498	0.498	1	A
Endosulfan I	ND		ug/kg	0.498	0.498	1	A
cis-Chlordane	ND		ug/kg	0.498	0.498	1	A
trans-Nonachlor	ND		ug/kg	0.498	0.498	1	A
4,4'-DDE	ND		ug/kg	0.498	0.498	1	A
Dieldrin	ND		ug/kg	0.498	0.498	1	A
Endrin	ND		ug/kg	0.498	0.498	1	A
Endosulfan II	ND		ug/kg	0.498	0.498	1	A
4,4'-DDD	ND		ug/kg	0.498	0.498	1	A
cis-Nonachlor	ND		ug/kg	0.498	0.498	1	A
4,4'-DDT	ND		ug/kg	0.498	0.498	1	A
Methoxychlor	ND		ug/kg	4.98	4.98	1	A
Toxaphene	ND		ug/kg	25.0	25.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	58		30-150	A
DBOB	49		30-150	B
BZ 198	60		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-03
 Client ID: NV NATIVE BACKGROUND REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 22:34
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.883	0.883	1	A
gamma-BHC	ND		ug/kg	0.442	0.442	1	A
Heptachlor	ND		ug/kg	0.442	0.442	1	B
Aldrin	ND		ug/kg	0.442	0.442	1	A
Heptachlor epoxide	ND		ug/kg	0.883	0.883	1	B
Oxychlordane	ND		ug/kg	0.883	0.883	1	B
trans-Chlordane	ND		ug/kg	0.442	0.442	1	A
Endosulfan I	ND		ug/kg	0.442	0.442	1	A
cis-Chlordane	ND		ug/kg	0.442	0.442	1	A
trans-Nonachlor	ND		ug/kg	0.442	0.442	1	B
4,4'-DDE	ND		ug/kg	0.442	0.442	1	A
Dieldrin	ND		ug/kg	0.442	0.442	1	A
Endrin	ND		ug/kg	0.442	0.442	1	A
Endosulfan II	ND		ug/kg	0.442	0.442	1	A
4,4'-DDD	ND		ug/kg	0.442	0.442	1	A
cis-Nonachlor	ND		ug/kg	0.442	0.442	1	A
4,4'-DDT	ND		ug/kg	0.442	0.442	1	A
Methoxychlor	ND		ug/kg	4.42	4.42	1	A
Toxaphene	ND		ug/kg	22.2	22.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	60		30-150	A
BZ 198	65		30-150	A
DBOB	41		30-150	B
BZ 198	99		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-04
 Client ID: NV NATIVE BACKGROUND REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 23:08
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.874	0.874	1	A
gamma-BHC	ND		ug/kg	0.437	0.437	1	A
Heptachlor	ND		ug/kg	0.437	0.437	1	B
Aldrin	ND		ug/kg	0.437	0.437	1	A
Heptachlor epoxide	ND		ug/kg	0.874	0.874	1	B
Oxychlordane	ND		ug/kg	0.874	0.874	1	B
trans-Chlordane	ND		ug/kg	0.437	0.437	1	A
Endosulfan I	ND		ug/kg	0.437	0.437	1	A
cis-Chlordane	ND		ug/kg	0.437	0.437	1	A
trans-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDE	ND		ug/kg	0.437	0.437	1	A
Dieldrin	ND		ug/kg	0.437	0.437	1	A
Endrin	ND		ug/kg	0.437	0.437	1	A
Endosulfan II	ND		ug/kg	0.437	0.437	1	A
4,4'-DDD	ND		ug/kg	0.437	0.437	1	A
cis-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDT	ND		ug/kg	0.437	0.437	1	A
Methoxychlor	ND		ug/kg	4.37	4.37	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	59		30-150	A
DBOB	47		30-150	B
BZ 198	61		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-05
 Client ID: NV NATIVE BACKGROUND REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/10/17 23:42
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.978	0.978	1	A
gamma-BHC	ND		ug/kg	0.489	0.489	1	A
Heptachlor	ND		ug/kg	0.489	0.489	1	B
Aldrin	ND		ug/kg	0.489	0.489	1	A
Heptachlor epoxide	ND		ug/kg	0.978	0.978	1	B
Oxychlordane	ND		ug/kg	0.978	0.978	1	B
trans-Chlordane	ND		ug/kg	0.489	0.489	1	A
Endosulfan I	ND		ug/kg	0.489	0.489	1	A
cis-Chlordane	ND		ug/kg	0.489	0.489	1	A
trans-Nonachlor	ND		ug/kg	0.489	0.489	1	A
4,4'-DDE	ND		ug/kg	0.489	0.489	1	A
Dieldrin	ND		ug/kg	0.489	0.489	1	A
Endrin	ND		ug/kg	0.489	0.489	1	A
Endosulfan II	ND		ug/kg	0.489	0.489	1	A
4,4'-DDD	ND		ug/kg	0.489	0.489	1	B
cis-Nonachlor	ND		ug/kg	0.489	0.489	1	A
4,4'-DDT	ND		ug/kg	0.489	0.489	1	A
Methoxychlor	ND		ug/kg	4.89	4.89	1	A
Toxaphene	ND		ug/kg	24.6	24.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	67		30-150	A
BZ 198	59		30-150	A
DBOB	48		30-150	B
BZ 198	62		30-150	B



Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-06
 Client ID: NV LABORATORY CONTROL REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 00:16
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.947	0.947	1	A
gamma-BHC	ND		ug/kg	0.473	0.473	1	A
Heptachlor	ND		ug/kg	0.473	0.473	1	A
Aldrin	ND		ug/kg	0.473	0.473	1	A
Heptachlor epoxide	ND		ug/kg	0.947	0.947	1	B
Oxychlordane	ND		ug/kg	0.947	0.947	1	B
trans-Chlordane	ND		ug/kg	0.473	0.473	1	A
Endosulfan I	ND		ug/kg	0.473	0.473	1	A
cis-Chlordane	ND		ug/kg	0.473	0.473	1	A
trans-Nonachlor	ND		ug/kg	0.473	0.473	1	B
4,4'-DDE	ND		ug/kg	0.473	0.473	1	A
Dieldrin	ND		ug/kg	0.473	0.473	1	A
Endrin	ND		ug/kg	0.473	0.473	1	A
Endosulfan II	ND		ug/kg	0.473	0.473	1	A
4,4'-DDD	ND		ug/kg	0.473	0.473	1	A
cis-Nonachlor	ND		ug/kg	0.473	0.473	1	A
4,4'-DDT	ND		ug/kg	0.473	0.473	1	A
Methoxychlor	ND		ug/kg	4.73	4.73	1	A
Toxaphene	ND		ug/kg	23.8	23.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	64		30-150	A
BZ 198	61		30-150	A
DBOB	60		30-150	B
BZ 198	65		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-07
 Client ID: NV LABORATORY CONTROL REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 00:50
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.917	0.917	1	A
gamma-BHC	ND		ug/kg	0.459	0.459	1	A
Heptachlor	ND		ug/kg	0.459	0.459	1	A
Aldrin	ND		ug/kg	0.459	0.459	1	A
Heptachlor epoxide	ND		ug/kg	0.917	0.917	1	B
Oxychlordane	ND		ug/kg	0.917	0.917	1	B
trans-Chlordane	ND		ug/kg	0.459	0.459	1	A
Endosulfan I	ND		ug/kg	0.459	0.459	1	A
cis-Chlordane	ND		ug/kg	0.459	0.459	1	A
trans-Nonachlor	ND		ug/kg	0.459	0.459	1	A
4,4'-DDE	ND		ug/kg	0.459	0.459	1	A
Dieldrin	ND		ug/kg	0.459	0.459	1	A
Endrin	ND		ug/kg	0.459	0.459	1	A
Endosulfan II	ND		ug/kg	0.459	0.459	1	A
4,4'-DDD	ND		ug/kg	0.459	0.459	1	A
cis-Nonachlor	ND		ug/kg	0.459	0.459	1	A
4,4'-DDT	ND		ug/kg	0.459	0.459	1	A
Methoxychlor	ND		ug/kg	4.59	4.59	1	A
Toxaphene	ND		ug/kg	23.0	23.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	54		30-150	A
BZ 198	54		30-150	A
DBOB	48		30-150	B
BZ 198	56		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-08
 Client ID: NV LABORATORY CONTROL REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 01:24
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.907	0.907	1	A
gamma-BHC	ND		ug/kg	0.454	0.454	1	A
Heptachlor	ND		ug/kg	0.454	0.454	1	A
Aldrin	ND		ug/kg	0.454	0.454	1	A
Heptachlor epoxide	ND		ug/kg	0.907	0.907	1	B
Oxychlordane	ND		ug/kg	0.907	0.907	1	B
trans-Chlordane	ND		ug/kg	0.454	0.454	1	A
Endosulfan I	ND		ug/kg	0.454	0.454	1	A
cis-Chlordane	ND		ug/kg	0.454	0.454	1	A
trans-Nonachlor	ND		ug/kg	0.454	0.454	1	B
4,4'-DDE	ND		ug/kg	0.454	0.454	1	B
Dieldrin	ND		ug/kg	0.454	0.454	1	A
Endrin	ND		ug/kg	0.454	0.454	1	A
Endosulfan II	ND		ug/kg	0.454	0.454	1	A
4,4'-DDD	ND		ug/kg	0.454	0.454	1	B
cis-Nonachlor	ND		ug/kg	0.454	0.454	1	A
4,4'-DDT	ND		ug/kg	0.454	0.454	1	A
Methoxychlor	ND		ug/kg	4.54	4.54	1	A
Toxaphene	ND		ug/kg	22.8	22.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	62		30-150	A
BZ 198	62		30-150	A
DBOB	55		30-150	B
BZ 198	65		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-09
 Client ID: NV LABORATORY CONTROL REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 01:58
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.893	0.893	1	A
gamma-BHC	ND		ug/kg	0.446	0.446	1	A
Heptachlor	ND		ug/kg	0.446	0.446	1	A
Aldrin	ND		ug/kg	0.446	0.446	1	A
Heptachlor epoxide	ND		ug/kg	0.893	0.893	1	B
Oxychlordane	ND		ug/kg	0.893	0.893	1	B
trans-Chlordane	ND		ug/kg	0.446	0.446	1	A
Endosulfan I	ND		ug/kg	0.446	0.446	1	A
cis-Chlordane	ND		ug/kg	0.446	0.446	1	A
trans-Nonachlor	ND		ug/kg	0.446	0.446	1	B
4,4'-DDE	ND		ug/kg	0.446	0.446	1	A
Dieldrin	ND		ug/kg	0.446	0.446	1	A
Endrin	ND		ug/kg	0.446	0.446	1	A
Endosulfan II	ND		ug/kg	0.446	0.446	1	A
4,4'-DDD	ND		ug/kg	0.446	0.446	1	A
cis-Nonachlor	ND		ug/kg	0.446	0.446	1	A
4,4'-DDT	ND		ug/kg	0.446	0.446	1	A
Methoxychlor	ND		ug/kg	4.46	4.46	1	A
Toxaphene	ND		ug/kg	22.4	22.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	64		30-150	A
BZ 198	66		30-150	A
DBOB	58		30-150	B
BZ 198	70		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-10
 Client ID: NV LABORATORY CONTROL REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 02:32
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.896	0.896	1	A
gamma-BHC	ND		ug/kg	0.448	0.448	1	A
Heptachlor	ND		ug/kg	0.448	0.448	1	A
Aldrin	ND		ug/kg	0.448	0.448	1	A
Heptachlor epoxide	ND		ug/kg	0.896	0.896	1	B
Oxychlordane	ND		ug/kg	0.896	0.896	1	B
trans-Chlordane	ND		ug/kg	0.448	0.448	1	A
Endosulfan I	ND		ug/kg	0.448	0.448	1	A
cis-Chlordane	ND		ug/kg	0.448	0.448	1	A
trans-Nonachlor	ND		ug/kg	0.448	0.448	1	B
4,4'-DDE	ND		ug/kg	0.448	0.448	1	A
Dieldrin	ND		ug/kg	0.448	0.448	1	A
Endrin	ND		ug/kg	0.448	0.448	1	A
Endosulfan II	ND		ug/kg	0.448	0.448	1	A
4,4'-DDD	ND		ug/kg	0.448	0.448	1	A
cis-Nonachlor	ND		ug/kg	0.448	0.448	1	A
4,4'-DDT	ND		ug/kg	0.448	0.448	1	A
Methoxychlor	ND		ug/kg	4.48	4.48	1	A
Toxaphene	ND		ug/kg	22.5	22.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	62		30-150	A
DBOB	54		30-150	B
BZ 198	65		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-11
 Client ID: NV CLDS REFERENCE SEDIMENT REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Extraction Date: 10/27/17 12:30

Cleanup Method: EPA 3630

Cleanup Date: 10/30/17

Matrix: Tissue

Analytical Method: 1,8081B

Analytical Date: 11/11/17 03:06

Analyst: DP

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.877	0.877	1	A
gamma-BHC	ND		ug/kg	0.438	0.438	1	A
Heptachlor	ND		ug/kg	0.438	0.438	1	A
Aldrin	ND		ug/kg	0.438	0.438	1	A
Heptachlor epoxide	ND		ug/kg	0.877	0.877	1	B
Oxychlordane	ND		ug/kg	0.877	0.877	1	B
trans-Chlordane	ND		ug/kg	0.438	0.438	1	A
Endosulfan I	ND		ug/kg	0.438	0.438	1	A
cis-Chlordane	ND		ug/kg	0.438	0.438	1	A
trans-Nonachlor	ND		ug/kg	0.438	0.438	1	B
4,4'-DDE	ND		ug/kg	0.438	0.438	1	A
Dieldrin	ND		ug/kg	0.438	0.438	1	A
Endrin	ND		ug/kg	0.438	0.438	1	A
Endosulfan II	ND		ug/kg	0.438	0.438	1	A
4,4'-DDD	ND		ug/kg	0.438	0.438	1	A
cis-Nonachlor	ND		ug/kg	0.438	0.438	1	A
4,4'-DDT	ND		ug/kg	0.438	0.438	1	B
Methoxychlor	ND		ug/kg	4.38	4.38	1	A
Toxaphene	ND		ug/kg	22.0	22.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	45		30-150	A
BZ 198	46		30-150	A
DBOB	34		30-150	B
BZ 198	48		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-12
 Client ID: NV CLDS REFERENCE SEDIMENT REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 03:40
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.931	0.931	1	A
gamma-BHC	ND		ug/kg	0.466	0.466	1	A
Heptachlor	ND		ug/kg	0.466	0.466	1	A
Aldrin	ND		ug/kg	0.466	0.466	1	A
Heptachlor epoxide	ND		ug/kg	0.931	0.931	1	B
Oxychlordane	ND		ug/kg	0.931	0.931	1	B
trans-Chlordane	ND		ug/kg	0.466	0.466	1	A
Endosulfan I	ND		ug/kg	0.466	0.466	1	A
cis-Chlordane	ND		ug/kg	0.466	0.466	1	A
trans-Nonachlor	ND		ug/kg	0.466	0.466	1	B
4,4'-DDE	ND		ug/kg	0.466	0.466	1	B
Dieldrin	ND		ug/kg	0.466	0.466	1	A
Endrin	ND		ug/kg	0.466	0.466	1	A
Endosulfan II	ND		ug/kg	0.466	0.466	1	A
4,4'-DDD	ND		ug/kg	0.466	0.466	1	A
cis-Nonachlor	ND		ug/kg	0.466	0.466	1	A
4,4'-DDT	ND		ug/kg	0.466	0.466	1	A
Methoxychlor	ND		ug/kg	4.66	4.66	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	49		30-150	A
BZ 198	47		30-150	A
DBOB	45		30-150	B
BZ 198	50		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-13
 Client ID: NV CLDS REFERENCE SEDIMENT REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 04:14
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.888	0.888	1	A
gamma-BHC	ND		ug/kg	0.444	0.444	1	A
Heptachlor	ND		ug/kg	0.444	0.444	1	A
Aldrin	ND		ug/kg	0.444	0.444	1	A
Heptachlor epoxide	ND		ug/kg	0.888	0.888	1	B
Oxychlordane	ND		ug/kg	0.888	0.888	1	B
trans-Chlordane	ND		ug/kg	0.444	0.444	1	A
Endosulfan I	ND		ug/kg	0.444	0.444	1	A
cis-Chlordane	ND		ug/kg	0.444	0.444	1	A
trans-Nonachlor	ND		ug/kg	0.444	0.444	1	B
4,4'-DDE	ND		ug/kg	0.444	0.444	1	A
Dieldrin	ND		ug/kg	0.444	0.444	1	A
Endrin	ND		ug/kg	0.444	0.444	1	A
Endosulfan II	ND		ug/kg	0.444	0.444	1	A
4,4'-DDD	ND		ug/kg	0.444	0.444	1	A
cis-Nonachlor	ND		ug/kg	0.444	0.444	1	A
4,4'-DDT	ND		ug/kg	0.444	0.444	1	A
Methoxychlor	ND		ug/kg	4.44	4.44	1	A
Toxaphene	ND		ug/kg	22.3	22.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	51		30-150	A
BZ 198	63		30-150	A
DBOB	48		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-14
 Client ID: NV CLDS REFERENCE SEDIMENT REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 04:48
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.901	0.901	1	A
gamma-BHC	ND		ug/kg	0.450	0.450	1	A
Heptachlor	ND		ug/kg	0.450	0.450	1	A
Aldrin	ND		ug/kg	0.450	0.450	1	A
Heptachlor epoxide	ND		ug/kg	0.901	0.901	1	B
Oxychlordane	ND		ug/kg	0.901	0.901	1	B
trans-Chlordane	ND		ug/kg	0.450	0.450	1	A
Endosulfan I	ND		ug/kg	0.450	0.450	1	A
cis-Chlordane	ND		ug/kg	0.450	0.450	1	A
trans-Nonachlor	ND		ug/kg	0.450	0.450	1	A
4,4'-DDE	ND		ug/kg	0.450	0.450	1	A
Dieldrin	ND		ug/kg	0.450	0.450	1	A
Endrin	ND		ug/kg	0.450	0.450	1	A
Endosulfan II	ND		ug/kg	0.450	0.450	1	A
4,4'-DDD	ND		ug/kg	0.450	0.450	1	A
cis-Nonachlor	ND		ug/kg	0.450	0.450	1	A
4,4'-DDT	ND		ug/kg	0.450	0.450	1	A
Methoxychlor	ND		ug/kg	4.50	4.50	1	A
Toxaphene	ND		ug/kg	22.6	22.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	48		30-150	A
BZ 198	47		30-150	A
DBOB	48		30-150	B
BZ 198	49		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-15
Client ID: NV CLDS REFERENCE SEDIMENT REP E
Sample Location: NEW HAVEN, CT

Matrix: Tissue
Analytical Method: 1,8081B
Analytical Date: 11/11/17 05:22
Analyst: DP
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 10/27/17 12:30
Cleanup Method: EPA 3630
Cleanup Date: 10/30/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.988	0.988	1	A
gamma-BHC	ND		ug/kg	0.494	0.494	1	A
Heptachlor	ND		ug/kg	0.494	0.494	1	A
Aldrin	ND		ug/kg	0.494	0.494	1	A
Heptachlor epoxide	ND		ug/kg	0.988	0.988	1	B
Oxychlordane	ND		ug/kg	0.988	0.988	1	B
trans-Chlordane	ND		ug/kg	0.494	0.494	1	A
Endosulfan I	ND		ug/kg	0.494	0.494	1	A
cis-Chlordane	ND		ug/kg	0.494	0.494	1	A
trans-Nonachlor	ND		ug/kg	0.494	0.494	1	B
4,4'-DDE	ND		ug/kg	0.494	0.494	1	A
Dieldrin	ND		ug/kg	0.494	0.494	1	A
Endrin	ND		ug/kg	0.494	0.494	1	A
Endosulfan II	ND		ug/kg	0.494	0.494	1	A
4,4'-DDD	ND		ug/kg	0.494	0.494	1	A
cis-Nonachlor	ND		ug/kg	0.494	0.494	1	A
4,4'-DDT	ND		ug/kg	0.494	0.494	1	A
Methoxychlor	ND		ug/kg	4.94	4.94	1	A
Toxaphene	ND		ug/kg	24.8	24.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	50		30-150	A
BZ 198	53		30-150	A
DBOB	48		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-16
 Client ID: NV COMPOSITE 1 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 05:56
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.949	0.949	1	A
gamma-BHC	ND		ug/kg	0.474	0.474	1	A
Heptachlor	ND		ug/kg	0.474	0.474	1	A
Aldrin	ND		ug/kg	0.474	0.474	1	A
Heptachlor epoxide	ND		ug/kg	0.949	0.949	1	B
Oxychlordane	ND		ug/kg	0.949	0.949	1	B
trans-Chlordane	ND		ug/kg	0.474	0.474	1	A
Endosulfan I	ND		ug/kg	0.474	0.474	1	A
cis-Chlordane	ND		ug/kg	0.474	0.474	1	A
trans-Nonachlor	ND		ug/kg	0.474	0.474	1	B
4,4'-DDE	ND		ug/kg	0.474	0.474	1	A
Dieldrin	ND		ug/kg	0.474	0.474	1	A
Endrin	ND		ug/kg	0.474	0.474	1	A
Endosulfan II	ND		ug/kg	0.474	0.474	1	A
4,4'-DDD	ND		ug/kg	0.474	0.474	1	A
cis-Nonachlor	ND		ug/kg	0.474	0.474	1	A
4,4'-DDT	ND		ug/kg	0.474	0.474	1	A
Methoxychlor	ND		ug/kg	4.74	4.74	1	A
Toxaphene	ND		ug/kg	23.8	23.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	62		30-150	A
DBOB	56		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-17
 Client ID: NV COMPOSITE 1 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 06:30
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.914	0.914	1	A
gamma-BHC	ND		ug/kg	0.457	0.457	1	A
Heptachlor	ND		ug/kg	0.457	0.457	1	A
Aldrin	ND		ug/kg	0.457	0.457	1	A
Heptachlor epoxide	ND		ug/kg	0.914	0.914	1	B
Oxychlordane	ND		ug/kg	0.914	0.914	1	B
trans-Chlordane	ND		ug/kg	0.457	0.457	1	A
Endosulfan I	ND		ug/kg	0.457	0.457	1	A
cis-Chlordane	ND		ug/kg	0.457	0.457	1	A
trans-Nonachlor	ND		ug/kg	0.457	0.457	1	B
4,4'-DDE	ND		ug/kg	0.457	0.457	1	A
Dieldrin	ND		ug/kg	0.457	0.457	1	A
Endrin	ND		ug/kg	0.457	0.457	1	A
Endosulfan II	ND		ug/kg	0.457	0.457	1	A
4,4'-DDD	ND		ug/kg	0.457	0.457	1	A
cis-Nonachlor	ND		ug/kg	0.457	0.457	1	A
4,4'-DDT	ND		ug/kg	0.457	0.457	1	A
Methoxychlor	ND		ug/kg	4.57	4.57	1	A
Toxaphene	ND		ug/kg	22.9	22.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	42		30-150	A
BZ 198	46		30-150	A
DBOB	34		30-150	B
BZ 198	48		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-18
 Client ID: NV COMPOSITE 1 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 07:04
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.973	0.973	1	A
gamma-BHC	ND		ug/kg	0.486	0.486	1	A
Heptachlor	ND		ug/kg	0.486	0.486	1	A
Aldrin	ND		ug/kg	0.486	0.486	1	A
Heptachlor epoxide	ND		ug/kg	0.973	0.973	1	B
Oxychlordane	ND		ug/kg	0.973	0.973	1	B
trans-Chlordane	ND		ug/kg	0.486	0.486	1	A
Endosulfan I	ND		ug/kg	0.486	0.486	1	A
cis-Chlordane	ND		ug/kg	0.486	0.486	1	A
trans-Nonachlor	ND		ug/kg	0.486	0.486	1	B
4,4'-DDE	ND		ug/kg	0.486	0.486	1	A
Dieldrin	ND		ug/kg	0.486	0.486	1	A
Endrin	ND		ug/kg	0.486	0.486	1	A
Endosulfan II	ND		ug/kg	0.486	0.486	1	A
4,4'-DDD	ND		ug/kg	0.486	0.486	1	A
cis-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDT	ND		ug/kg	0.486	0.486	1	A
Methoxychlor	ND		ug/kg	4.86	4.86	1	A
Toxaphene	ND		ug/kg	24.4	24.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	64		30-150	A
DBOB	52		30-150	B
BZ 198	67		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-19
 Client ID: NV COMPOSITE 1 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 07:38
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.952	0.952	1	A
gamma-BHC	ND		ug/kg	0.476	0.476	1	A
Heptachlor	ND		ug/kg	0.476	0.476	1	A
Aldrin	ND		ug/kg	0.476	0.476	1	A
Heptachlor epoxide	ND		ug/kg	0.952	0.952	1	B
Oxychlordane	ND		ug/kg	0.952	0.952	1	B
trans-Chlordane	ND		ug/kg	0.476	0.476	1	A
Endosulfan I	ND		ug/kg	0.476	0.476	1	A
cis-Chlordane	ND		ug/kg	0.476	0.476	1	A
trans-Nonachlor	ND		ug/kg	0.476	0.476	1	B
4,4'-DDE	ND		ug/kg	0.476	0.476	1	A
Dieldrin	ND		ug/kg	0.476	0.476	1	A
Endrin	ND		ug/kg	0.476	0.476	1	A
Endosulfan II	ND		ug/kg	0.476	0.476	1	A
4,4'-DDD	ND		ug/kg	0.476	0.476	1	A
cis-Nonachlor	ND		ug/kg	0.476	0.476	1	A
4,4'-DDT	ND		ug/kg	0.476	0.476	1	A
Methoxychlor	ND		ug/kg	4.76	4.76	1	A
Toxaphene	ND		ug/kg	23.9	23.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	63		30-150	A
BZ 198	64		30-150	A
DBOB	53		30-150	B
BZ 198	67		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-20
 Client ID: NV COMPOSITE 1 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 12:30
 Cleanup Method: EPA 3630
 Cleanup Date: 10/30/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/11/17 08:12
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.945	0.945	1	A
gamma-BHC	ND		ug/kg	0.472	0.472	1	A
Heptachlor	ND		ug/kg	0.472	0.472	1	B
Aldrin	ND		ug/kg	0.472	0.472	1	A
Heptachlor epoxide	ND		ug/kg	0.945	0.945	1	B
Oxychlordane	ND		ug/kg	0.945	0.945	1	B
trans-Chlordane	ND		ug/kg	0.472	0.472	1	A
Endosulfan I	ND		ug/kg	0.472	0.472	1	A
cis-Chlordane	ND		ug/kg	0.472	0.472	1	A
trans-Nonachlor	ND		ug/kg	0.472	0.472	1	B
4,4'-DDE	ND		ug/kg	0.472	0.472	1	A
Dieldrin	ND		ug/kg	0.472	0.472	1	A
Endrin	ND		ug/kg	0.472	0.472	1	A
Endosulfan II	ND		ug/kg	0.472	0.472	1	A
4,4'-DDD	ND		ug/kg	0.472	0.472	1	A
cis-Nonachlor	ND		ug/kg	0.472	0.472	1	A
4,4'-DDT	ND		ug/kg	0.472	0.472	1	A
Methoxychlor	ND		ug/kg	4.72	4.72	1	A
Toxaphene	ND		ug/kg	23.7	23.7	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	64		30-150	A
DBOB	54		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-21
 Client ID: NV COMPOSITE 2 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/13/17 17:46
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.971	0.971	1	A
gamma-BHC	ND		ug/kg	0.485	0.485	1	A
Heptachlor	ND		ug/kg	0.485	0.485	1	A
Aldrin	ND		ug/kg	0.485	0.485	1	A
Heptachlor epoxide	ND		ug/kg	0.971	0.971	1	B
Oxychlordane	ND		ug/kg	0.971	0.971	1	B
trans-Chlordane	ND		ug/kg	0.485	0.485	1	A
Endosulfan I	ND		ug/kg	0.485	0.485	1	A
cis-Chlordane	ND		ug/kg	0.485	0.485	1	A
trans-Nonachlor	ND		ug/kg	0.485	0.485	1	A
4,4'-DDE	ND		ug/kg	0.485	0.485	1	A
Dieldrin	ND		ug/kg	0.485	0.485	1	A
Endrin	ND		ug/kg	0.485	0.485	1	A
Endosulfan II	ND		ug/kg	0.485	0.485	1	A
4,4'-DDD	ND		ug/kg	0.485	0.485	1	A
cis-Nonachlor	ND		ug/kg	0.485	0.485	1	A
4,4'-DDT	ND		ug/kg	0.485	0.485	1	A
Methoxychlor	ND		ug/kg	4.85	4.85	1	A
Toxaphene	ND		ug/kg	24.4	24.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	96		30-150	A
BZ 198	59		30-150	A
DBOB	59		30-150	B
BZ 198	61		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-22
 Client ID: NV COMPOSITE 2 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 12:17
 Analyst: DP

Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.919	0.919	1	A
gamma-BHC	ND		ug/kg	0.460	0.460	1	A
Heptachlor	ND		ug/kg	0.460	0.460	1	A
Aldrin	ND		ug/kg	0.460	0.460	1	A
Heptachlor epoxide	ND		ug/kg	0.919	0.919	1	B
Oxychlordane	ND		ug/kg	0.919	0.919	1	B
trans-Chlordane	ND		ug/kg	0.460	0.460	1	A
Endosulfan I	ND		ug/kg	0.460	0.460	1	A
cis-Chlordane	ND		ug/kg	0.460	0.460	1	A
trans-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDE	ND		ug/kg	0.460	0.460	1	A
Dieldrin	ND		ug/kg	0.460	0.460	1	A
Endrin	ND		ug/kg	0.460	0.460	1	A
Endosulfan II	ND		ug/kg	0.460	0.460	1	A
4,4'-DDD	ND		ug/kg	0.460	0.460	1	A
cis-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDT	ND		ug/kg	0.460	0.460	1	A
Methoxychlor	ND		ug/kg	4.60	4.60	1	A
Toxaphene	ND		ug/kg	23.1	23.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	145		30-150	A
BZ 198	63		30-150	A
DBOB	113		30-150	B
BZ 198	63		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-23
 Client ID: NV COMPOSITE 2 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 12:51
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.842	0.842	1	A
gamma-BHC	ND		ug/kg	0.421	0.421	1	A
Heptachlor	ND		ug/kg	0.421	0.421	1	A
Aldrin	ND		ug/kg	0.421	0.421	1	A
Heptachlor epoxide	ND		ug/kg	0.842	0.842	1	B
Oxychlordane	ND		ug/kg	0.842	0.842	1	B
trans-Chlordane	ND		ug/kg	0.421	0.421	1	A
Endosulfan I	ND		ug/kg	0.421	0.421	1	A
cis-Chlordane	ND		ug/kg	0.421	0.421	1	A
trans-Nonachlor	ND		ug/kg	0.421	0.421	1	A
4,4'-DDE	ND		ug/kg	0.421	0.421	1	A
Dieldrin	ND		ug/kg	0.421	0.421	1	A
Endrin	ND		ug/kg	0.421	0.421	1	A
Endosulfan II	ND		ug/kg	0.421	0.421	1	A
4,4'-DDD	ND		ug/kg	0.421	0.421	1	A
cis-Nonachlor	ND		ug/kg	0.421	0.421	1	A
4,4'-DDT	ND		ug/kg	0.421	0.421	1	A
Methoxychlor	ND		ug/kg	4.21	4.21	1	A
Toxaphene	ND		ug/kg	21.1	21.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	120		30-150	A
BZ 198	66		30-150	A
DBOB	86		30-150	B
BZ 198	67		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-24
 Client ID: NV COMPOSITE 2 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 13:25
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.976	0.976	1	A
gamma-BHC	ND		ug/kg	0.488	0.488	1	A
Heptachlor	ND		ug/kg	0.488	0.488	1	A
Aldrin	ND		ug/kg	0.488	0.488	1	A
Heptachlor epoxide	ND		ug/kg	0.976	0.976	1	B
Oxychlordane	ND		ug/kg	0.976	0.976	1	B
trans-Chlordane	ND		ug/kg	0.488	0.488	1	A
Endosulfan I	ND		ug/kg	0.488	0.488	1	A
cis-Chlordane	ND		ug/kg	0.488	0.488	1	A
trans-Nonachlor	ND		ug/kg	0.488	0.488	1	A
4,4'-DDE	ND		ug/kg	0.488	0.488	1	A
Dieldrin	ND		ug/kg	0.488	0.488	1	A
Endrin	ND		ug/kg	0.488	0.488	1	A
Endosulfan II	ND		ug/kg	0.488	0.488	1	A
4,4'-DDD	ND		ug/kg	0.488	0.488	1	A
cis-Nonachlor	ND		ug/kg	0.488	0.488	1	A
4,4'-DDT	ND		ug/kg	0.488	0.488	1	A
Methoxychlor	ND		ug/kg	4.88	4.88	1	A
Toxaphene	ND		ug/kg	24.5	24.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	116		30-150	A
BZ 198	63		30-150	A
DBOB	76		30-150	B
BZ 198	65		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-25
 Client ID: NV COMPOSITE 2 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 13:59
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.871	0.871	1	A
gamma-BHC	ND		ug/kg	0.436	0.436	1	A
Heptachlor	ND		ug/kg	0.436	0.436	1	A
Aldrin	ND		ug/kg	0.436	0.436	1	A
Heptachlor epoxide	ND		ug/kg	0.871	0.871	1	B
Oxychlordane	ND		ug/kg	0.871	0.871	1	B
trans-Chlordane	ND		ug/kg	0.436	0.436	1	A
Endosulfan I	ND		ug/kg	0.436	0.436	1	A
cis-Chlordane	ND		ug/kg	0.436	0.436	1	A
trans-Nonachlor	ND		ug/kg	0.436	0.436	1	A
4,4'-DDE	ND		ug/kg	0.436	0.436	1	A
Dieldrin	ND		ug/kg	0.436	0.436	1	A
Endrin	ND		ug/kg	0.436	0.436	1	A
Endosulfan II	ND		ug/kg	0.436	0.436	1	A
4,4'-DDD	ND		ug/kg	0.436	0.436	1	A
cis-Nonachlor	ND		ug/kg	0.436	0.436	1	A
4,4'-DDT	ND		ug/kg	0.436	0.436	1	A
Methoxychlor	ND		ug/kg	4.36	4.36	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	100		30-150	A
BZ 198	60		30-150	A
DBOB	68		30-150	B
BZ 198	80		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-26
 Client ID: NV COMPOSITE 3 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 14:33
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.896	0.896	1	A
gamma-BHC	ND		ug/kg	0.448	0.448	1	A
Heptachlor	ND		ug/kg	0.448	0.448	1	A
Aldrin	ND		ug/kg	0.448	0.448	1	A
Heptachlor epoxide	ND		ug/kg	0.896	0.896	1	B
Oxychlordane	ND		ug/kg	0.896	0.896	1	B
trans-Chlordane	ND		ug/kg	0.448	0.448	1	A
Endosulfan I	ND		ug/kg	0.448	0.448	1	A
cis-Chlordane	ND		ug/kg	0.448	0.448	1	A
trans-Nonachlor	ND		ug/kg	0.448	0.448	1	A
4,4'-DDE	ND		ug/kg	0.448	0.448	1	A
Dieldrin	ND		ug/kg	0.448	0.448	1	A
Endrin	ND		ug/kg	0.448	0.448	1	A
Endosulfan II	ND		ug/kg	0.448	0.448	1	A
4,4'-DDD	ND		ug/kg	0.448	0.448	1	A
cis-Nonachlor	ND		ug/kg	0.448	0.448	1	A
4,4'-DDT	ND		ug/kg	0.448	0.448	1	A
Methoxychlor	ND		ug/kg	4.48	4.48	1	A
Toxaphene	ND		ug/kg	22.5	22.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	89		30-150	A
BZ 198	53		30-150	A
DBOB	47		30-150	B
BZ 198	61		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-27
 Client ID: NV COMPOSITE 3 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 15:07
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.874	0.874	1	A
gamma-BHC	ND		ug/kg	0.437	0.437	1	A
Heptachlor	ND		ug/kg	0.437	0.437	1	A
Aldrin	ND		ug/kg	0.437	0.437	1	A
Heptachlor epoxide	ND		ug/kg	0.874	0.874	1	B
Oxychlordane	ND		ug/kg	0.874	0.874	1	B
trans-Chlordane	ND		ug/kg	0.437	0.437	1	A
Endosulfan I	ND		ug/kg	0.437	0.437	1	A
cis-Chlordane	ND		ug/kg	0.437	0.437	1	A
trans-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDE	ND		ug/kg	0.437	0.437	1	A
Dieldrin	ND		ug/kg	0.437	0.437	1	A
Endrin	ND		ug/kg	0.437	0.437	1	A
Endosulfan II	ND		ug/kg	0.437	0.437	1	A
4,4'-DDD	ND		ug/kg	0.437	0.437	1	A
cis-Nonachlor	ND		ug/kg	0.437	0.437	1	A
4,4'-DDT	ND		ug/kg	0.437	0.437	1	A
Methoxychlor	ND		ug/kg	4.37	4.37	1	A
Toxaphene	ND		ug/kg	21.9	21.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	66		30-150	A
BZ 198	46		30-150	A
DBOB	41		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-28
 Client ID: NV COMPOSITE 3 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 15:41
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.992	0.992	1	A
gamma-BHC	ND		ug/kg	0.496	0.496	1	A
Heptachlor	ND		ug/kg	0.496	0.496	1	A
Aldrin	ND		ug/kg	0.496	0.496	1	A
Heptachlor epoxide	ND		ug/kg	0.992	0.992	1	B
Oxychlordane	ND		ug/kg	0.992	0.992	1	B
trans-Chlordane	ND		ug/kg	0.496	0.496	1	A
Endosulfan I	ND		ug/kg	0.496	0.496	1	A
cis-Chlordane	ND		ug/kg	0.496	0.496	1	A
trans-Nonachlor	ND		ug/kg	0.496	0.496	1	A
4,4'-DDE	ND		ug/kg	0.496	0.496	1	A
Dieldrin	ND		ug/kg	0.496	0.496	1	A
Endrin	ND		ug/kg	0.496	0.496	1	A
Endosulfan II	ND		ug/kg	0.496	0.496	1	A
4,4'-DDD	ND		ug/kg	0.496	0.496	1	A
cis-Nonachlor	ND		ug/kg	0.496	0.496	1	A
4,4'-DDT	ND		ug/kg	0.496	0.496	1	A
Methoxychlor	ND		ug/kg	4.96	4.96	1	A
Toxaphene	ND		ug/kg	24.9	24.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	79		30-150	A
BZ 198	50		30-150	A
DBOB	42		30-150	B
BZ 198	54		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-29
 Client ID: NV COMPOSITE 3 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 16:15
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.958	0.958	1	A
gamma-BHC	ND		ug/kg	0.479	0.479	1	A
Heptachlor	ND		ug/kg	0.479	0.479	1	A
Aldrin	ND		ug/kg	0.479	0.479	1	A
Heptachlor epoxide	ND		ug/kg	0.958	0.958	1	B
Oxychlordane	ND		ug/kg	0.958	0.958	1	B
trans-Chlordane	ND		ug/kg	0.479	0.479	1	A
Endosulfan I	ND		ug/kg	0.479	0.479	1	A
cis-Chlordane	ND		ug/kg	0.479	0.479	1	A
trans-Nonachlor	ND		ug/kg	0.479	0.479	1	A
4,4'-DDE	ND		ug/kg	0.479	0.479	1	A
Dieldrin	ND		ug/kg	0.479	0.479	1	A
Endrin	ND		ug/kg	0.479	0.479	1	A
Endosulfan II	ND		ug/kg	0.479	0.479	1	A
4,4'-DDD	ND		ug/kg	0.479	0.479	1	A
cis-Nonachlor	ND		ug/kg	0.479	0.479	1	A
4,4'-DDT	ND		ug/kg	0.479	0.479	1	A
Methoxychlor	ND		ug/kg	4.79	4.79	1	A
Toxaphene	ND		ug/kg	24.0	24.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	116		30-150	A
BZ 198	64		30-150	A
DBOB	68		30-150	B
BZ 198	66		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-30
 Client ID: NV COMPOSITE 3 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 16:49
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.973	0.973	1	A
gamma-BHC	ND		ug/kg	0.486	0.486	1	A
Heptachlor	ND		ug/kg	0.486	0.486	1	A
Aldrin	ND		ug/kg	0.486	0.486	1	A
Heptachlor epoxide	ND		ug/kg	0.973	0.973	1	B
Oxychlordane	ND		ug/kg	0.973	0.973	1	B
trans-Chlordane	ND		ug/kg	0.486	0.486	1	A
Endosulfan I	ND		ug/kg	0.486	0.486	1	A
cis-Chlordane	ND		ug/kg	0.486	0.486	1	A
trans-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDE	ND		ug/kg	0.486	0.486	1	A
Dieldrin	ND		ug/kg	0.486	0.486	1	A
Endrin	ND		ug/kg	0.486	0.486	1	A
Endosulfan II	ND		ug/kg	0.486	0.486	1	A
4,4'-DDD	ND		ug/kg	0.486	0.486	1	A
cis-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDT	ND		ug/kg	0.486	0.486	1	A
Methoxychlor	ND		ug/kg	4.86	4.86	1	A
Toxaphene	ND		ug/kg	24.4	24.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	102		30-150	A
BZ 198	66		30-150	A
DBOB	63		30-150	B
BZ 198	71		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-31
 Client ID: NV COMPOSITE 4 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 17:23
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.956	0.956	1	A
gamma-BHC	ND		ug/kg	0.478	0.478	1	A
Heptachlor	ND		ug/kg	0.478	0.478	1	A
Aldrin	ND		ug/kg	0.478	0.478	1	A
Heptachlor epoxide	ND		ug/kg	0.956	0.956	1	B
Oxychlordane	ND		ug/kg	0.956	0.956	1	B
trans-Chlordane	ND		ug/kg	0.478	0.478	1	A
Endosulfan I	ND		ug/kg	0.478	0.478	1	A
cis-Chlordane	ND		ug/kg	0.478	0.478	1	A
trans-Nonachlor	ND		ug/kg	0.478	0.478	1	A
4,4'-DDE	ND		ug/kg	0.478	0.478	1	A
Dieldrin	ND		ug/kg	0.478	0.478	1	A
Endrin	ND		ug/kg	0.478	0.478	1	A
Endosulfan II	ND		ug/kg	0.478	0.478	1	A
4,4'-DDD	ND		ug/kg	0.478	0.478	1	A
cis-Nonachlor	ND		ug/kg	0.478	0.478	1	A
4,4'-DDT	ND		ug/kg	0.478	0.478	1	A
Methoxychlor	ND		ug/kg	4.78	4.78	1	A
Toxaphene	ND		ug/kg	24.0	24.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	79		30-150	A
BZ 198	52		30-150	A
DBOB	55		30-150	B
BZ 198	57		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-32
 Client ID: NV COMPOSITE 4 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 17:57
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.858	0.858	1	A
gamma-BHC	ND		ug/kg	0.429	0.429	1	A
Heptachlor	ND		ug/kg	0.429	0.429	1	A
Aldrin	ND		ug/kg	0.429	0.429	1	A
Heptachlor epoxide	ND		ug/kg	0.858	0.858	1	B
Oxychlordane	ND		ug/kg	0.858	0.858	1	B
trans-Chlordane	ND		ug/kg	0.429	0.429	1	A
Endosulfan I	ND		ug/kg	0.429	0.429	1	A
cis-Chlordane	ND		ug/kg	0.429	0.429	1	A
trans-Nonachlor	ND		ug/kg	0.429	0.429	1	A
4,4'-DDE	ND		ug/kg	0.429	0.429	1	A
Dieldrin	ND		ug/kg	0.429	0.429	1	A
Endrin	ND		ug/kg	0.429	0.429	1	A
Endosulfan II	ND		ug/kg	0.429	0.429	1	A
4,4'-DDD	ND		ug/kg	0.429	0.429	1	A
cis-Nonachlor	ND		ug/kg	0.429	0.429	1	A
4,4'-DDT	ND		ug/kg	0.429	0.429	1	A
Methoxychlor	ND		ug/kg	4.29	4.29	1	A
Toxaphene	ND		ug/kg	21.5	21.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	84		30-150	A
BZ 198	65		30-150	A
DBOB	58		30-150	B
BZ 198	68		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-33
 Client ID: NV COMPOSITE 4 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 18:31
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.868	0.868	1	A
gamma-BHC	ND		ug/kg	0.434	0.434	1	A
Heptachlor	ND		ug/kg	0.434	0.434	1	A
Aldrin	ND		ug/kg	0.434	0.434	1	A
Heptachlor epoxide	ND		ug/kg	0.868	0.868	1	B
Oxychlordane	ND		ug/kg	0.868	0.868	1	B
trans-Chlordane	ND		ug/kg	0.434	0.434	1	A
Endosulfan I	ND		ug/kg	0.434	0.434	1	A
cis-Chlordane	ND		ug/kg	0.434	0.434	1	A
trans-Nonachlor	ND		ug/kg	0.434	0.434	1	A
4,4'-DDE	ND		ug/kg	0.434	0.434	1	A
Dieldrin	ND		ug/kg	0.434	0.434	1	A
Endrin	ND		ug/kg	0.434	0.434	1	A
Endosulfan II	ND		ug/kg	0.434	0.434	1	A
4,4'-DDD	ND		ug/kg	0.434	0.434	1	A
cis-Nonachlor	ND		ug/kg	0.434	0.434	1	A
4,4'-DDT	ND		ug/kg	0.434	0.434	1	A
Methoxychlor	ND		ug/kg	4.34	4.34	1	A
Toxaphene	ND		ug/kg	21.8	21.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	119		30-150	A
BZ 198	58		30-150	A
DBOB	100		30-150	B
BZ 198	62		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-34
 Client ID: NV COMPOSITE 4 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 19:05
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.934	0.934	1	A
gamma-BHC	ND		ug/kg	0.467	0.467	1	A
Heptachlor	ND		ug/kg	0.467	0.467	1	A
Aldrin	ND		ug/kg	0.467	0.467	1	A
Heptachlor epoxide	ND		ug/kg	0.934	0.934	1	B
Oxychlordane	ND		ug/kg	0.934	0.934	1	B
trans-Chlordane	ND		ug/kg	0.467	0.467	1	A
Endosulfan I	ND		ug/kg	0.467	0.467	1	A
cis-Chlordane	ND		ug/kg	0.467	0.467	1	A
trans-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDE	ND		ug/kg	0.467	0.467	1	A
Dieldrin	ND		ug/kg	0.467	0.467	1	A
Endrin	ND		ug/kg	0.467	0.467	1	A
Endosulfan II	ND		ug/kg	0.467	0.467	1	A
4,4'-DDD	ND		ug/kg	0.467	0.467	1	A
cis-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDT	ND		ug/kg	0.467	0.467	1	A
Methoxychlor	ND		ug/kg	4.67	4.67	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	109		30-150	A
BZ 198	60		30-150	A
DBOB	90		30-150	B
BZ 198	64		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-35
 Client ID: NV COMPOSITE 4 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 19:39
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.922	0.922	1	A
gamma-BHC	ND		ug/kg	0.461	0.461	1	A
Heptachlor	ND		ug/kg	0.461	0.461	1	A
Aldrin	ND		ug/kg	0.461	0.461	1	A
Heptachlor epoxide	ND		ug/kg	0.922	0.922	1	B
Oxychlordane	ND		ug/kg	0.922	0.922	1	B
trans-Chlordane	ND		ug/kg	0.461	0.461	1	A
Endosulfan I	ND		ug/kg	0.461	0.461	1	A
cis-Chlordane	ND		ug/kg	0.461	0.461	1	A
trans-Nonachlor	ND		ug/kg	0.461	0.461	1	A
4,4'-DDE	ND		ug/kg	0.461	0.461	1	A
Dieldrin	ND		ug/kg	0.461	0.461	1	A
Endrin	ND		ug/kg	0.461	0.461	1	A
Endosulfan II	ND		ug/kg	0.461	0.461	1	A
4,4'-DDD	ND		ug/kg	0.461	0.461	1	A
cis-Nonachlor	ND		ug/kg	0.461	0.461	1	A
4,4'-DDT	ND		ug/kg	0.461	0.461	1	A
Methoxychlor	ND		ug/kg	4.61	4.61	1	A
Toxaphene	ND		ug/kg	23.2	23.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	82		30-150	A
BZ 198	53		30-150	A
DBOB	51		30-150	B
BZ 198	57		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-36
 Client ID: NV COMPOSITE 5 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 20:13
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.929	0.929	1	A
gamma-BHC	ND		ug/kg	0.465	0.465	1	A
Heptachlor	ND		ug/kg	0.465	0.465	1	A
Aldrin	ND		ug/kg	0.465	0.465	1	A
Heptachlor epoxide	ND		ug/kg	0.929	0.929	1	B
Oxychlordane	ND		ug/kg	0.929	0.929	1	B
trans-Chlordane	ND		ug/kg	0.465	0.465	1	A
Endosulfan I	ND		ug/kg	0.465	0.465	1	A
cis-Chlordane	ND		ug/kg	0.465	0.465	1	A
trans-Nonachlor	ND		ug/kg	0.465	0.465	1	A
4,4'-DDE	ND		ug/kg	0.465	0.465	1	A
Dieldrin	ND		ug/kg	0.465	0.465	1	A
Endrin	ND		ug/kg	0.465	0.465	1	A
Endosulfan II	ND		ug/kg	0.465	0.465	1	A
4,4'-DDD	ND		ug/kg	0.465	0.465	1	A
cis-Nonachlor	ND		ug/kg	0.465	0.465	1	A
4,4'-DDT	ND		ug/kg	0.465	0.465	1	A
Methoxychlor	ND		ug/kg	4.65	4.65	1	A
Toxaphene	ND		ug/kg	23.3	23.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	147		30-150	A
BZ 198	77		30-150	A
DBOB	101		30-150	B
BZ 198	80		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-37
 Client ID: NV COMPOSITE 5 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 20:47
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.936	0.936	1	A
gamma-BHC	ND		ug/kg	0.468	0.468	1	A
Heptachlor	ND		ug/kg	0.468	0.468	1	A
Aldrin	ND		ug/kg	0.468	0.468	1	A
Heptachlor epoxide	ND		ug/kg	0.936	0.936	1	B
Oxychlordane	ND		ug/kg	0.936	0.936	1	B
trans-Chlordane	ND		ug/kg	0.468	0.468	1	A
Endosulfan I	ND		ug/kg	0.468	0.468	1	A
cis-Chlordane	ND		ug/kg	0.468	0.468	1	A
trans-Nonachlor	ND		ug/kg	0.468	0.468	1	A
4,4'-DDE	ND		ug/kg	0.468	0.468	1	A
Dieldrin	ND		ug/kg	0.468	0.468	1	A
Endrin	ND		ug/kg	0.468	0.468	1	A
Endosulfan II	ND		ug/kg	0.468	0.468	1	A
4,4'-DDD	ND		ug/kg	0.468	0.468	1	A
cis-Nonachlor	ND		ug/kg	0.468	0.468	1	A
4,4'-DDT	ND		ug/kg	0.468	0.468	1	A
Methoxychlor	ND		ug/kg	4.68	4.68	1	A
Toxaphene	ND		ug/kg	23.5	23.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	125		30-150	A
BZ 198	66		30-150	A
DBOB	76		30-150	B
BZ 198	68		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-38
 Client ID: NV COMPOSITE 5 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 21:21
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.919	0.919	1	A
gamma-BHC	ND		ug/kg	0.460	0.460	1	A
Heptachlor	ND		ug/kg	0.460	0.460	1	A
Aldrin	ND		ug/kg	0.460	0.460	1	A
Heptachlor epoxide	ND		ug/kg	0.919	0.919	1	B
Oxychlordane	ND		ug/kg	0.919	0.919	1	B
trans-Chlordane	ND		ug/kg	0.460	0.460	1	A
Endosulfan I	ND		ug/kg	0.460	0.460	1	A
cis-Chlordane	ND		ug/kg	0.460	0.460	1	A
trans-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDE	ND		ug/kg	0.460	0.460	1	A
Dieldrin	ND		ug/kg	0.460	0.460	1	A
Endrin	ND		ug/kg	0.460	0.460	1	A
Endosulfan II	ND		ug/kg	0.460	0.460	1	A
4,4'-DDD	ND		ug/kg	0.460	0.460	1	A
cis-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDT	ND		ug/kg	0.460	0.460	1	A
Methoxychlor	ND		ug/kg	4.60	4.60	1	A
Toxaphene	ND		ug/kg	23.1	23.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	177	Q	30-150	A
BZ 198	84		30-150	A
DBOB	139		30-150	B
BZ 198	88		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-39
 Client ID: NV COMPOSITE 5 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 21:55
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.886	0.886	1	A
gamma-BHC	ND		ug/kg	0.443	0.443	1	A
Heptachlor	ND		ug/kg	0.443	0.443	1	A
Aldrin	ND		ug/kg	0.443	0.443	1	A
Heptachlor epoxide	ND		ug/kg	0.886	0.886	1	B
Oxychlordane	ND		ug/kg	0.886	0.886	1	B
trans-Chlordane	ND		ug/kg	0.443	0.443	1	A
Endosulfan I	ND		ug/kg	0.443	0.443	1	A
cis-Chlordane	ND		ug/kg	0.443	0.443	1	A
trans-Nonachlor	ND		ug/kg	0.443	0.443	1	A
4,4'-DDE	ND		ug/kg	0.443	0.443	1	A
Dieldrin	ND		ug/kg	0.443	0.443	1	A
Endrin	ND		ug/kg	0.443	0.443	1	A
Endosulfan II	ND		ug/kg	0.443	0.443	1	A
4,4'-DDD	ND		ug/kg	0.443	0.443	1	A
cis-Nonachlor	ND		ug/kg	0.443	0.443	1	A
4,4'-DDT	ND		ug/kg	0.443	0.443	1	A
Methoxychlor	ND		ug/kg	4.43	4.43	1	A
Toxaphene	ND		ug/kg	22.2	22.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	131		30-150	A
BZ 198	72		30-150	A
DBOB	103		30-150	B
BZ 198	77		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-40
 Client ID: NV COMPOSITE 5 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 13:30
 Cleanup Method: EPA 3630
 Cleanup Date: 11/02/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/17/17 22:29
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.973	0.973	1	A
gamma-BHC	ND		ug/kg	0.486	0.486	1	A
Heptachlor	ND		ug/kg	0.486	0.486	1	A
Aldrin	ND		ug/kg	0.486	0.486	1	A
Heptachlor epoxide	ND		ug/kg	0.973	0.973	1	B
Oxychlordane	ND		ug/kg	0.973	0.973	1	B
trans-Chlordane	ND		ug/kg	0.486	0.486	1	A
Endosulfan I	ND		ug/kg	0.486	0.486	1	A
cis-Chlordane	ND		ug/kg	0.486	0.486	1	A
trans-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDE	ND		ug/kg	0.486	0.486	1	A
Dieldrin	ND		ug/kg	0.486	0.486	1	A
Endrin	ND		ug/kg	0.486	0.486	1	A
Endosulfan II	ND		ug/kg	0.486	0.486	1	A
4,4'-DDD	ND		ug/kg	0.486	0.486	1	A
cis-Nonachlor	ND		ug/kg	0.486	0.486	1	A
4,4'-DDT	ND		ug/kg	0.486	0.486	1	A
Methoxychlor	ND		ug/kg	4.86	4.86	1	A
Toxaphene	ND		ug/kg	24.4	24.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	134		30-150	A
BZ 198	75		30-150	A
DBOB	114		30-150	B
BZ 198	80		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-41
 Client ID: NV COMPOSITE 6 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/15/17 22:09
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.853	0.853	1	A
gamma-BHC	ND		ug/kg	0.427	0.427	1	A
Heptachlor	ND		ug/kg	0.427	0.427	1	A
Aldrin	ND		ug/kg	0.427	0.427	1	A
Heptachlor epoxide	ND		ug/kg	0.853	0.853	1	B
Oxychlordane	ND		ug/kg	0.853	0.853	1	B
trans-Chlordane	ND		ug/kg	0.427	0.427	1	A
Endosulfan I	ND		ug/kg	0.427	0.427	1	A
cis-Chlordane	ND		ug/kg	0.427	0.427	1	A
trans-Nonachlor	ND		ug/kg	0.427	0.427	1	A
4,4'-DDE	ND		ug/kg	0.427	0.427	1	A
Dieldrin	ND		ug/kg	0.427	0.427	1	A
Endrin	ND		ug/kg	0.427	0.427	1	A
Endosulfan II	ND		ug/kg	0.427	0.427	1	A
4,4'-DDD	ND		ug/kg	0.427	0.427	1	A
cis-Nonachlor	ND		ug/kg	0.427	0.427	1	A
4,4'-DDT	ND		ug/kg	0.427	0.427	1	A
Methoxychlor	ND		ug/kg	4.27	4.27	1	A
Toxaphene	ND		ug/kg	21.4	21.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	38		30-150	A
BZ 198	48		30-150	A
DBOB	30		30-150	B
BZ 198	41		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-42
 Client ID: NV COMPOSITE 6 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 00:26
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.980	0.980	1	A
gamma-BHC	ND		ug/kg	0.490	0.490	1	A
Heptachlor	ND		ug/kg	0.490	0.490	1	A
Aldrin	ND		ug/kg	0.490	0.490	1	A
Heptachlor epoxide	ND		ug/kg	0.980	0.980	1	B
Oxychlordane	ND		ug/kg	0.980	0.980	1	B
trans-Chlordane	ND		ug/kg	0.490	0.490	1	A
Endosulfan I	ND		ug/kg	0.490	0.490	1	A
cis-Chlordane	ND		ug/kg	0.490	0.490	1	A
trans-Nonachlor	ND		ug/kg	0.490	0.490	1	A
4,4'-DDE	ND		ug/kg	0.490	0.490	1	A
Dieldrin	ND		ug/kg	0.490	0.490	1	A
Endrin	ND		ug/kg	0.490	0.490	1	A
Endosulfan II	ND		ug/kg	0.490	0.490	1	A
4,4'-DDD	ND		ug/kg	0.490	0.490	1	A
cis-Nonachlor	ND		ug/kg	0.490	0.490	1	A
4,4'-DDT	ND		ug/kg	0.490	0.490	1	A
Methoxychlor	ND		ug/kg	4.90	4.90	1	A
Toxaphene	ND		ug/kg	24.6	24.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	53		30-150	A
BZ 198	191	Q	30-150	A
DBOB	46		30-150	B
BZ 198	57		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-43
 Client ID: NV COMPOSITE 6 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 00:59
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.976	0.976	1	A
gamma-BHC	ND		ug/kg	0.488	0.488	1	A
Heptachlor	ND		ug/kg	0.488	0.488	1	A
Aldrin	ND		ug/kg	0.488	0.488	1	A
Heptachlor epoxide	ND		ug/kg	0.976	0.976	1	B
Oxychlordane	ND		ug/kg	0.976	0.976	1	B
trans-Chlordane	ND		ug/kg	0.488	0.488	1	A
Endosulfan I	ND		ug/kg	0.488	0.488	1	A
cis-Chlordane	ND		ug/kg	0.488	0.488	1	A
trans-Nonachlor	ND		ug/kg	0.488	0.488	1	A
4,4'-DDE	ND		ug/kg	0.488	0.488	1	A
Dieldrin	ND		ug/kg	0.488	0.488	1	A
Endrin	ND		ug/kg	0.488	0.488	1	A
Endosulfan II	ND		ug/kg	0.488	0.488	1	A
4,4'-DDD	ND		ug/kg	0.488	0.488	1	A
cis-Nonachlor	ND		ug/kg	0.488	0.488	1	A
4,4'-DDT	ND		ug/kg	0.488	0.488	1	A
Methoxychlor	ND		ug/kg	4.88	4.88	1	A
Toxaphene	ND		ug/kg	24.5	24.5	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	52		30-150	A
BZ 198	53		30-150	A
DBOB	41		30-150	B
BZ 198	54		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-44
 Client ID: NV COMPOSITE 6 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 01:34
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.934	0.934	1	A
gamma-BHC	ND		ug/kg	0.467	0.467	1	A
Heptachlor	ND		ug/kg	0.467	0.467	1	A
Aldrin	ND		ug/kg	0.467	0.467	1	A
Heptachlor epoxide	ND		ug/kg	0.934	0.934	1	B
Oxychlordane	ND		ug/kg	0.934	0.934	1	B
trans-Chlordane	ND		ug/kg	0.467	0.467	1	A
Endosulfan I	ND		ug/kg	0.467	0.467	1	A
cis-Chlordane	ND		ug/kg	0.467	0.467	1	A
trans-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDE	ND		ug/kg	0.467	0.467	1	A
Dieldrin	ND		ug/kg	0.467	0.467	1	A
Endrin	ND		ug/kg	0.467	0.467	1	A
Endosulfan II	ND		ug/kg	0.467	0.467	1	A
4,4'-DDD	ND		ug/kg	0.467	0.467	1	A
cis-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDT	ND		ug/kg	0.467	0.467	1	A
Methoxychlor	ND		ug/kg	4.67	4.67	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	54		30-150	A
BZ 198	55		30-150	A
DBOB	42		30-150	B
BZ 198	56		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-45
 Client ID: NV COMPOSITE 6 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 02:08
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.994	0.994	1	A
gamma-BHC	ND		ug/kg	0.497	0.497	1	A
Heptachlor	ND		ug/kg	0.497	0.497	1	A
Aldrin	ND		ug/kg	0.497	0.497	1	A
Heptachlor epoxide	ND		ug/kg	0.994	0.994	1	B
Oxychlordane	ND		ug/kg	0.994	0.994	1	B
trans-Chlordane	ND		ug/kg	0.497	0.497	1	A
Endosulfan I	ND		ug/kg	0.497	0.497	1	A
cis-Chlordane	ND		ug/kg	0.497	0.497	1	A
trans-Nonachlor	ND		ug/kg	0.497	0.497	1	A
4,4'-DDE	ND		ug/kg	0.497	0.497	1	A
Dieldrin	ND		ug/kg	0.497	0.497	1	A
Endrin	ND		ug/kg	0.497	0.497	1	A
Endosulfan II	ND		ug/kg	0.497	0.497	1	A
4,4'-DDD	ND		ug/kg	0.497	0.497	1	A
cis-Nonachlor	ND		ug/kg	0.497	0.497	1	A
4,4'-DDT	ND		ug/kg	0.497	0.497	1	A
Methoxychlor	ND		ug/kg	4.97	4.97	1	A
Toxaphene	ND		ug/kg	25.0	25.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	49		30-150	A
BZ 198	54		30-150	A
DBOB	38		30-150	B
BZ 198	70		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-46
 Client ID: NV COMPOSITE 7 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 02:42
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.954	0.954	1	A
gamma-BHC	ND		ug/kg	0.477	0.477	1	A
Heptachlor	ND		ug/kg	0.477	0.477	1	A
Aldrin	ND		ug/kg	0.477	0.477	1	A
Heptachlor epoxide	ND		ug/kg	0.954	0.954	1	B
Oxychlordane	ND		ug/kg	0.954	0.954	1	B
trans-Chlordane	ND		ug/kg	0.477	0.477	1	A
Endosulfan I	ND		ug/kg	0.477	0.477	1	A
cis-Chlordane	ND		ug/kg	0.477	0.477	1	A
trans-Nonachlor	ND		ug/kg	0.477	0.477	1	A
4,4'-DDE	ND		ug/kg	0.477	0.477	1	A
Dieldrin	ND		ug/kg	0.477	0.477	1	A
Endrin	ND		ug/kg	0.477	0.477	1	A
Endosulfan II	ND		ug/kg	0.477	0.477	1	A
4,4'-DDD	ND		ug/kg	0.477	0.477	1	A
cis-Nonachlor	ND		ug/kg	0.477	0.477	1	A
4,4'-DDT	ND		ug/kg	0.477	0.477	1	A
Methoxychlor	ND		ug/kg	4.77	4.77	1	A
Toxaphene	ND		ug/kg	24.0	24.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	55		30-150	A
DBOB	44		30-150	B
BZ 198	56		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-47
 Client ID: NV COMPOSITE 7 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 03:16
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.919	0.919	1	A
gamma-BHC	ND		ug/kg	0.460	0.460	1	A
Heptachlor	ND		ug/kg	0.460	0.460	1	A
Aldrin	ND		ug/kg	0.460	0.460	1	A
Heptachlor epoxide	ND		ug/kg	0.919	0.919	1	B
Oxychlordane	ND		ug/kg	0.919	0.919	1	B
trans-Chlordane	ND		ug/kg	0.460	0.460	1	A
Endosulfan I	ND		ug/kg	0.460	0.460	1	A
cis-Chlordane	ND		ug/kg	0.460	0.460	1	A
trans-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDE	ND		ug/kg	0.460	0.460	1	A
Dieldrin	ND		ug/kg	0.460	0.460	1	A
Endrin	ND		ug/kg	0.460	0.460	1	A
Endosulfan II	ND		ug/kg	0.460	0.460	1	A
4,4'-DDD	ND		ug/kg	0.460	0.460	1	A
cis-Nonachlor	ND		ug/kg	0.460	0.460	1	A
4,4'-DDT	ND		ug/kg	0.460	0.460	1	A
Methoxychlor	ND		ug/kg	4.60	4.60	1	A
Toxaphene	ND		ug/kg	23.1	23.1	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	55		30-150	A
BZ 198	56		30-150	A
DBOB	44		30-150	B
BZ 198	58		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-48
 Client ID: NV COMPOSITE 7 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 03:50
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.866	0.866	1	A
gamma-BHC	ND		ug/kg	0.433	0.433	1	A
Heptachlor	ND		ug/kg	0.433	0.433	1	A
Aldrin	ND		ug/kg	0.433	0.433	1	A
Heptachlor epoxide	ND		ug/kg	0.866	0.866	1	B
Oxychlordane	ND		ug/kg	0.866	0.866	1	B
trans-Chlordane	ND		ug/kg	0.433	0.433	1	A
Endosulfan I	ND		ug/kg	0.433	0.433	1	A
cis-Chlordane	ND		ug/kg	0.433	0.433	1	A
trans-Nonachlor	ND		ug/kg	0.433	0.433	1	A
4,4'-DDE	ND		ug/kg	0.433	0.433	1	A
Dieldrin	ND		ug/kg	0.433	0.433	1	A
Endrin	ND		ug/kg	0.433	0.433	1	A
Endosulfan II	ND		ug/kg	0.433	0.433	1	A
4,4'-DDD	ND		ug/kg	0.433	0.433	1	A
cis-Nonachlor	ND		ug/kg	0.433	0.433	1	A
4,4'-DDT	ND		ug/kg	0.433	0.433	1	A
Methoxychlor	ND		ug/kg	4.33	4.33	1	A
Toxaphene	ND		ug/kg	21.8	21.8	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	56		30-150	A
BZ 198	51		30-150	A
DBOB	44		30-150	B
BZ 198	53		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-49
 Client ID: NV COMPOSITE 7 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Extraction Method: EPA 3570

Extraction Date: 10/27/17 17:15

Cleanup Method: EPA 3630

Cleanup Date: 11/01/17

Matrix: Tissue

Analytical Method: 1,8081B

Analytical Date: 11/16/17 04:24

Analyst: DP

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.929	0.929	1	A
gamma-BHC	ND		ug/kg	0.465	0.465	1	A
Heptachlor	ND		ug/kg	0.465	0.465	1	A
Aldrin	ND		ug/kg	0.465	0.465	1	A
Heptachlor epoxide	ND		ug/kg	0.929	0.929	1	B
Oxychlordane	ND		ug/kg	0.929	0.929	1	B
trans-Chlordane	ND		ug/kg	0.465	0.465	1	A
Endosulfan I	ND		ug/kg	0.465	0.465	1	A
cis-Chlordane	ND		ug/kg	0.465	0.465	1	A
trans-Nonachlor	ND		ug/kg	0.465	0.465	1	A
4,4'-DDE	ND		ug/kg	0.465	0.465	1	A
Dieldrin	ND		ug/kg	0.465	0.465	1	A
Endrin	ND		ug/kg	0.465	0.465	1	A
Endosulfan II	ND		ug/kg	0.465	0.465	1	A
4,4'-DDD	ND		ug/kg	0.465	0.465	1	A
cis-Nonachlor	ND		ug/kg	0.465	0.465	1	A
4,4'-DDT	ND		ug/kg	0.465	0.465	1	A
Methoxychlor	ND		ug/kg	4.65	4.65	1	A
Toxaphene	ND		ug/kg	23.3	23.3	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	58		30-150	A
BZ 198	55		30-150	A
DBOB	48		30-150	B
BZ 198	55		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-50
 Client ID: NV COMPOSITE 7 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 04:58
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.934	0.934	1	A
gamma-BHC	ND		ug/kg	0.467	0.467	1	A
Heptachlor	ND		ug/kg	0.467	0.467	1	A
Aldrin	ND		ug/kg	0.467	0.467	1	A
Heptachlor epoxide	ND		ug/kg	0.934	0.934	1	B
Oxychlordane	ND		ug/kg	0.934	0.934	1	B
trans-Chlordane	ND		ug/kg	0.467	0.467	1	A
Endosulfan I	ND		ug/kg	0.467	0.467	1	A
cis-Chlordane	ND		ug/kg	0.467	0.467	1	A
trans-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDE	ND		ug/kg	0.467	0.467	1	A
Dieldrin	ND		ug/kg	0.467	0.467	1	A
Endrin	ND		ug/kg	0.467	0.467	1	A
Endosulfan II	ND		ug/kg	0.467	0.467	1	A
4,4'-DDD	ND		ug/kg	0.467	0.467	1	A
cis-Nonachlor	ND		ug/kg	0.467	0.467	1	A
4,4'-DDT	ND		ug/kg	0.467	0.467	1	A
Methoxychlor	ND		ug/kg	4.67	4.67	1	A
Toxaphene	ND		ug/kg	23.4	23.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	59		30-150	A
BZ 198	60		30-150	A
DBOB	50		30-150	B
BZ 198	62		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-51
 Client ID: NV COMPOSITE 8 REP A
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 05:32
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.914	0.914	1	A
gamma-BHC	ND		ug/kg	0.457	0.457	1	A
Heptachlor	ND		ug/kg	0.457	0.457	1	A
Aldrin	ND		ug/kg	0.457	0.457	1	A
Heptachlor epoxide	ND		ug/kg	0.914	0.914	1	B
Oxychlordane	ND		ug/kg	0.914	0.914	1	B
trans-Chlordane	ND		ug/kg	0.457	0.457	1	A
Endosulfan I	ND		ug/kg	0.457	0.457	1	A
cis-Chlordane	ND		ug/kg	0.457	0.457	1	A
trans-Nonachlor	ND		ug/kg	0.457	0.457	1	A
4,4'-DDE	ND		ug/kg	0.457	0.457	1	A
Dieldrin	ND		ug/kg	0.457	0.457	1	A
Endrin	ND		ug/kg	0.457	0.457	1	A
Endosulfan II	ND		ug/kg	0.457	0.457	1	A
4,4'-DDD	ND		ug/kg	0.457	0.457	1	A
cis-Nonachlor	ND		ug/kg	0.457	0.457	1	A
4,4'-DDT	ND		ug/kg	0.457	0.457	1	A
Methoxychlor	ND		ug/kg	4.57	4.57	1	A
Toxaphene	ND		ug/kg	22.9	22.9	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	70		30-150	A
BZ 198	67		30-150	A
DBOB	53		30-150	B
BZ 198	65		30-150	B

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-52
 Client ID: NV COMPOSITE 8 REP B
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 06:06
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.978	0.978	1	A
gamma-BHC	ND		ug/kg	0.489	0.489	1	A
Heptachlor	ND		ug/kg	0.489	0.489	1	A
Aldrin	ND		ug/kg	0.489	0.489	1	A
Heptachlor epoxide	ND		ug/kg	0.978	0.978	1	B
Oxychlordane	ND		ug/kg	0.978	0.978	1	B
trans-Chlordane	ND		ug/kg	0.489	0.489	1	A
Endosulfan I	ND		ug/kg	0.489	0.489	1	A
cis-Chlordane	ND		ug/kg	0.489	0.489	1	A
trans-Nonachlor	ND		ug/kg	0.489	0.489	1	A
4,4'-DDE	ND		ug/kg	0.489	0.489	1	A
Dieldrin	ND		ug/kg	0.489	0.489	1	A
Endrin	ND		ug/kg	0.489	0.489	1	A
Endosulfan II	ND		ug/kg	0.489	0.489	1	A
4,4'-DDD	ND		ug/kg	0.489	0.489	1	A
cis-Nonachlor	ND		ug/kg	0.489	0.489	1	A
4,4'-DDT	ND		ug/kg	0.489	0.489	1	A
Methoxychlor	ND		ug/kg	4.89	4.89	1	A
Toxaphene	ND		ug/kg	24.6	24.6	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	51		30-150	A
BZ 198	51		30-150	A
DBOB	41		30-150	B
BZ 198	50		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-53
 Client ID: NV COMPOSITE 8 REP C
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 06:40
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.838	0.838	1	A
gamma-BHC	ND		ug/kg	0.419	0.419	1	A
Heptachlor	ND		ug/kg	0.419	0.419	1	A
Aldrin	ND		ug/kg	0.419	0.419	1	A
Heptachlor epoxide	ND		ug/kg	0.838	0.838	1	B
Oxychlordane	ND		ug/kg	0.838	0.838	1	B
trans-Chlordane	ND		ug/kg	0.419	0.419	1	A
Endosulfan I	ND		ug/kg	0.419	0.419	1	A
cis-Chlordane	ND		ug/kg	0.419	0.419	1	A
trans-Nonachlor	ND		ug/kg	0.419	0.419	1	A
4,4'-DDE	ND		ug/kg	0.419	0.419	1	A
Dieldrin	ND		ug/kg	0.419	0.419	1	A
Endrin	ND		ug/kg	0.419	0.419	1	A
Endosulfan II	ND		ug/kg	0.419	0.419	1	A
4,4'-DDD	ND		ug/kg	0.419	0.419	1	A
cis-Nonachlor	ND		ug/kg	0.419	0.419	1	A
4,4'-DDT	ND		ug/kg	0.419	0.419	1	A
Methoxychlor	ND		ug/kg	4.19	4.19	1	A
Toxaphene	ND		ug/kg	21.0	21.0	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	50		30-150	A
BZ 198	46		30-150	A
DBOB	37		30-150	B
BZ 198	48		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-54
 Client ID: NV COMPOSITE 8 REP D
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 07:14
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.853	0.853	1	A
gamma-BHC	ND		ug/kg	0.427	0.427	1	A
Heptachlor	ND		ug/kg	0.427	0.427	1	A
Aldrin	ND		ug/kg	0.427	0.427	1	A
Heptachlor epoxide	ND		ug/kg	0.853	0.853	1	B
Oxychlordane	ND		ug/kg	0.853	0.853	1	B
trans-Chlordane	ND		ug/kg	0.427	0.427	1	A
Endosulfan I	ND		ug/kg	0.427	0.427	1	A
cis-Chlordane	ND		ug/kg	0.427	0.427	1	A
trans-Nonachlor	ND		ug/kg	0.427	0.427	1	A
4,4'-DDE	ND		ug/kg	0.427	0.427	1	A
Dieldrin	ND		ug/kg	0.427	0.427	1	A
Endrin	ND		ug/kg	0.427	0.427	1	A
Endosulfan II	ND		ug/kg	0.427	0.427	1	A
4,4'-DDD	ND		ug/kg	0.427	0.427	1	A
cis-Nonachlor	ND		ug/kg	0.427	0.427	1	A
4,4'-DDT	ND		ug/kg	0.427	0.427	1	A
Methoxychlor	ND		ug/kg	4.27	4.27	1	A
Toxaphene	ND		ug/kg	21.4	21.4	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	53		30-150	A
BZ 198	48		30-150	A
DBOB	41		30-150	B
BZ 198	48		30-150	B

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-55
 Client ID: NV COMPOSITE 8 REP E
 Sample Location: NEW HAVEN, CT

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3570
 Extraction Date: 10/27/17 17:15
 Cleanup Method: EPA 3630
 Cleanup Date: 11/01/17

Matrix: Tissue
 Analytical Method: 1,8081B
 Analytical Date: 11/16/17 07:48
 Analyst: DP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.883	0.883	1	A
gamma-BHC	ND		ug/kg	0.442	0.442	1	A
Heptachlor	ND		ug/kg	0.442	0.442	1	A
Aldrin	ND		ug/kg	0.442	0.442	1	A
Heptachlor epoxide	ND		ug/kg	0.883	0.883	1	B
Oxychlordane	ND		ug/kg	0.883	0.883	1	B
trans-Chlordane	ND		ug/kg	0.442	0.442	1	A
Endosulfan I	ND		ug/kg	0.442	0.442	1	A
cis-Chlordane	ND		ug/kg	0.442	0.442	1	A
trans-Nonachlor	ND		ug/kg	0.442	0.442	1	A
4,4'-DDE	ND		ug/kg	0.442	0.442	1	A
Dieldrin	ND		ug/kg	0.442	0.442	1	A
Endrin	ND		ug/kg	0.442	0.442	1	A
Endosulfan II	ND		ug/kg	0.442	0.442	1	A
4,4'-DDD	ND		ug/kg	0.442	0.442	1	A
cis-Nonachlor	ND		ug/kg	0.442	0.442	1	A
4,4'-DDT	ND		ug/kg	0.442	0.442	1	A
Methoxychlor	ND		ug/kg	4.42	4.42	1	A
Toxaphene	ND		ug/kg	22.2	22.2	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	66		30-150	A
BZ 198	57		30-150	A
DBOB	57		30-150	B
BZ 198	61		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/10/17 15:46
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/27/17 12:30
Cleanup Method: EPA 3630
Cleanup Date: 10/30/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01-20 Batch: WG1057006-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
cis-Chlordane	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDE	ND		ug/kg	0.500	0.500	A
Dieldrin	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	62		30-150	A
BZ 198	67		30-150	A
DBOB	56		30-150	B
BZ 198	67		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/13/17 15:30
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/27/17 13:30
Cleanup Method: EPA 3630
Cleanup Date: 11/02/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 21-40 Batch: WG1057016-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
cis-Chlordane	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDE	ND		ug/kg	0.500	0.500	A
Dieldrin	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	65		30-150	A
BZ 198	70		30-150	A
DBOB	61		30-150	B
BZ 198	70		30-150	B



Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/15/17 18:11
Analyst: DP

Extraction Method: EPA 3570
Extraction Date: 10/27/17 17:15
Cleanup Method: EPA 3630
Cleanup Date: 11/01/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 41-55 Batch: WG1057025-1						
Hexachlorobenzene	ND		ug/kg	1.00	1.00	A
gamma-BHC	ND		ug/kg	0.500	0.500	A
Heptachlor	ND		ug/kg	0.500	0.500	A
Aldrin	ND		ug/kg	0.500	0.500	A
trans-Chlordane	ND		ug/kg	0.500	0.500	A
Endosulfan I	ND		ug/kg	0.500	0.500	A
cis-Chlordane	ND		ug/kg	0.500	0.500	A
trans-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDE	ND		ug/kg	0.500	0.500	A
Dieldrin	ND		ug/kg	0.500	0.500	A
Endrin	ND		ug/kg	0.500	0.500	A
Endosulfan II	ND		ug/kg	0.500	0.500	A
4,4'-DDD	ND		ug/kg	0.500	0.500	A
cis-Nonachlor	ND		ug/kg	0.500	0.500	A
4,4'-DDT	ND		ug/kg	0.500	0.500	A
Methoxychlor	ND		ug/kg	5.00	5.00	A
Toxaphene	ND		ug/kg	25.1	25.1	A
Heptachlor epoxide	ND		ug/kg	1.00	1.00	B
Oxychlordane	ND		ug/kg	1.00	1.00	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	53		30-150	A
BZ 198	63		30-150	A
DBOB	56		30-150	B
BZ 198	65		30-150	B



Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 Batch: WG1057006-2 WG1057006-3									
Hexachlorobenzene	59		57		50-120	3		30	A
gamma-BHC	64		61		50-120	5		30	A
Heptachlor	63		57		50-120	10		30	A
Aldrin	63		60		50-120	5		30	A
trans-Chlordane	68		68		50-120	0		30	A
Endosulfan I	69		67		50-120	3		30	A
cis-Chlordane	65		64		50-120	2		30	A
trans-Nonachlor	66		66		50-120	0		30	A
4,4'-DDE	74		75		50-120	1		30	A
Dieldrin	74		74		50-120	0		30	A
Endrin	68		64		50-120	6		30	A
4,4'-DDD	72		72		50-120	0		30	A
cis-Nonachlor	73		74		50-120	1		30	A
4,4'-DDT	62		65		50-120	5		30	A
Methoxychlor	54		58		50-120	7		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	70		63		30-150	A
BZ 198	68		72		30-150	A
DBOB	57		51		30-150	B
BZ 198	72		71		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 Batch: WG1057006-2 WG1057006-3									
Heptachlor epoxide	68		66		50-120	3		30	B
Oxychlordane	67		65		50-120	3		30	B
Endosulfan II	70		72		50-120	3		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	70		63		30-150	A
BZ 198	68		72		30-150	A
DBOB	57		51		30-150	B
BZ 198	72		71		30-150	B

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 Batch: WG1057016-2 WG1057016-3									
Hexachlorobenzene	63		63		50-120	0		30	A
gamma-BHC	66		69		50-120	4		30	A
Heptachlor	64		68		50-120	6		30	A
Aldrin	68		66		50-120	3		30	A
trans-Chlordane	74		71		50-120	4		30	A
Endosulfan I	73		71		50-120	3		30	A
cis-Chlordane	70		71		50-120	1		30	A
trans-Nonachlor	71		72		50-120	1		30	A
4,4'-DDE	81		80		50-120	1		30	A
Dieldrin	82		81		50-120	1		30	A
Endrin	69		70		50-120	1		30	A
4,4'-DDD	76		75		50-120	1		30	A
cis-Nonachlor	80		79		50-120	1		30	A
4,4'-DDT	75		74		50-120	1		30	A
Methoxychlor	62		59		50-120	5		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	73		71		30-150	A
BZ 198	80		79		30-150	A
DBOB	70		65		30-150	B
BZ 198	79		73		30-150	B

Lab Control Sample Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 Batch: WG1057016-2 WG1057016-3									
Heptachlor epoxide	72		68		50-120	6		30	B
Oxychlordane	72		68		50-120	6		30	B
Endosulfan II	77		55		50-120	33	Q	30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	73		71		30-150	A
BZ 198	80		79		30-150	A
DBOB	70		65		30-150	B
BZ 198	79		73		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 Batch: WG1057025-2 WG1057025-3									
Hexachlorobenzene	40	Q	43	Q	50-120	7		30	A
gamma-BHC	40	Q	45	Q	50-120	12		30	A
Heptachlor	41	Q	44	Q	50-120	7		30	A
Aldrin	40	Q	43	Q	50-120	7		30	A
trans-Chlordane	48	Q	51		50-120	6		30	A
Endosulfan I	48	Q	53		50-120	10		30	A
cis-Chlordane	48	Q	49	Q	50-120	2		30	A
trans-Nonachlor	50		50		50-120	0		30	A
4,4'-DDE	60		59		50-120	2		30	A
Dieldrin	56		58		50-120	4		30	A
Endrin	51		53		50-120	4		30	A
4,4'-DDD	58		61		50-120	5		30	A
cis-Nonachlor	57		56		50-120	2		30	A
4,4'-DDT	60		66		50-120	10		30	A
Methoxychlor	58		73		50-120	23		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	41		44		30-150	A
BZ 198	65		113		30-150	A
DBOB	30		38		30-150	B
BZ 198	62		63		30-150	B

Lab Control Sample Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 Batch: WG1057025-2 WG1057025-3									
Heptachlor epoxide	43	Q	52		50-120	19		30	B
Oxychlordane	42	Q	50		50-120	17		30	B
Endosulfan II	54		60		50-120	11		30	B

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	41		44		30-150	A
BZ 198	65		113		30-150	A
DBOB	30		38		30-150	B
BZ 198	62		63		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057006-6 WG1057006-7 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A													
Hexachlorobenzene	ND	97.8	51.1	52		57.1	59		50-120	11		30	A
gamma-BHC	ND	97.8	61.5	63		63.4	66		50-120	3		30	A
Heptachlor	ND	97.8	59.3	61		60.0	62		50-120	1		30	A
Aldrin	ND	97.8	60.6	62		56.8	59		50-120	6		30	A
Heptachlor epoxide	ND	97.8	50.4	52		49.5	51		50-120	2		30	B
Oxychlordane	ND	97.8	53.5	55		51.9	54		50-120	3		30	B
trans-Chlordane	ND	97.8	66.2	68		62.6	65		50-120	6		30	A
Endosulfan I	ND	97.8	57.0	58		54.8	57		50-120	4		30	A
cis-Chlordane	ND	97.8	59.8	61		56.4	58		50-120	6		30	A
trans-Nonachlor	ND	97.8	55.8	57		52.0	54		50-120	7		30	A
4,4'-DDE	ND	97.8	63.5	65		58.4	61		50-120	8		30	A
Dieldrin	ND	97.8	60.7	62		58.5	61		50-120	4		30	A
Endrin	ND	97.8	57.6	59		56.8	59		50-120	1		30	A
Endosulfan II	ND	97.8	59.5	61		59.0	61		50-120	1		30	B
4,4'-DDD	ND	97.8	67.5	69		63.4	66		50-120	6		30	A
cis-Nonachlor	ND	97.8	63.9	65		63.1	65		50-120	1		30	A
4,4'-DDT	ND	97.8	53.0	54		50.3	52		50-120	5		30	A
Methoxychlor	ND	97.8	54.3	56		52.9	55		50-120	3		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
BZ 198	71		92		30-150	A
DBOB	72		79		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057006-6 WG1057006-7 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A												

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	76		110		30-150	B
DBOB	50		55		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab COMPOSITE 2 REP A Associated sample(s): 21-40 QC Batch ID: WG1057016-6 WG1057016-7 QC Sample: L1735250-21 Client ID: NV													
Hexachlorobenzene	ND	87.3	36.2	42	Q	48.1	53		50-120	28		30	A
gamma-BHC	ND	87.3	40.3	46	Q	51.4	57		50-120	24		30	A
Heptachlor	ND	87.3	38.5	44	Q	49.6	55		50-120	25		30	A
Aldrin	ND	87.3	39.9	46	Q	50.8	56		50-120	24		30	A
Heptachlor epoxide	ND	87.3	31.6	36	Q	39.3	44	Q	50-120	22		30	B
Oxychlordane	ND	87.3	31.7	36	Q	40.0	44	Q	50-120	23		30	B
trans-Chlordane	ND	87.3	38.4	44	Q	47.2	52		50-120	21		30	A
Endosulfan I	ND	87.3	36.6	42	Q	44.8	50	Q	50-120	20		30	A
cis-Chlordane	ND	87.3	34.2	39	Q	41.8	46	Q	50-120	20		30	A
trans-Nonachlor	ND	87.3	34.8	40	Q	42.3	47	Q	50-120	19		30	A
4,4'-DDE	ND	87.3	37.9	43	Q	47.4	53		50-120	22		30	A
Dieldrin	ND	87.3	37.2	43	Q	46.5	52		50-120	22		30	A
Endrin	ND	87.3	33.7	39	Q	43.5	48	Q	50-120	25		30	A
Endosulfan II	ND	87.3	34.2	39	Q	43.6	48	Q	50-120	24		30	B
4,4'-DDD	ND	87.3	38.1	44	Q	49.3	55		50-120	26		30	A
cis-Nonachlor	ND	87.3	38.4	44	Q	48.8	54		50-120	24		30	A
4,4'-DDT	ND	87.3	31.4	36	Q	38.7	43	Q	50-120	21		30	A
Methoxychlor	ND	87.3	30.5	35	Q	38.7	43	Q	50-120	24		30	A

Surrogate	MS % Recovery	MSD % Recovery	Acceptance Criteria	Column
BZ 198	50	56	30-150	A
DBOB	74	91	30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057016-6 WG1057016-7 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A												

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	54		62		30-150	B
DBOB	48		58		30-150	B

Matrix Spike Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab COMPOSITE 6 REP A Associated sample(s): 41-55 QC Batch ID: WG1057025-6 WG1057025-7 QC Sample: L1735250-41 Client ID: NV													
Hexachlorobenzene	ND	94.5	49.5	52		45.5	50		50-120	8		30	A
gamma-BHC	ND	94.5	52.8	56		48.3	53		50-120	9		30	A
Heptachlor	ND	94.5	52.8	56		46.6	52		50-120	12		30	A
Aldrin	ND	94.5	51.7	55		45.3	50		50-120	13		30	A
Heptachlor epoxide	ND	94.5	45.1	48	Q	39.5	44	Q	50-120	13		30	B
Oxychlordane	ND	94.5	43.6	46	Q	38.6	43	Q	50-120	12		30	B
trans-Chlordane	ND	94.5	51.3	54		47.4	52		50-120	8		30	A
Endosulfan I	ND	94.5	49.3	52		45.1	50	Q	50-120	9		30	A
cis-Chlordane	ND	94.5	45.6	48	Q	42.0	47	Q	50-120	8		30	A
trans-Nonachlor	ND	94.5	46.3	49	Q	42.6	47	Q	50-120	8		30	A
4,4'-DDE	ND	94.5	53.4	57		49.7	55		50-120	7		30	A
Dieldrin	ND	94.5	50.8	54		45.5	50		50-120	11		30	A
Endrin	ND	94.5	48.0	51		43.2	48	Q	50-120	11		30	A
Endosulfan II	ND	94.5	45.1	48	Q	40.6	45	Q	50-120	11		30	B
4,4'-DDD	ND	94.5	57.5	61		52.4	58		50-120	9		30	A
cis-Nonachlor	ND	94.5	48.0	51		43.7	48	Q	50-120	9		30	A
4,4'-DDT	ND	94.5	48.3	51		43.4	48	Q	50-120	11		30	A
Methoxychlor	ND	94.5	59.6	63		54.3	60		50-120	9		30	A

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria	Column
BZ 198	58		206	Q	30-150	A
DBOB	58		57		30-150	A

Matrix Spike Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057025-6 WG1057025-7 QC Sample: L1735250-41 Client ID: NV
COMPOSITE 6 REP A

Surrogate	MS		MSD		Acceptance Criteria	Column
	% Recovery	Qualifier	% Recovery	Qualifier		
BZ 198	61		57		30-150	B
DBOB	48		41		30-150	B

Lab Duplicate Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057006-5 QC Sample: L1735250-01 Client ID: NV						
NATIVE BACKGROUND REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 A
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057006-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	51		61		30-150	A
BZ 198	59		58		30-150	A
DBOB	36		46		30-150	B
BZ 198	53		60		30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057016-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 A
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	ND	NDI	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057016-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	96		85		30-150	A
BZ 198	59		57		30-150	A
DBOB	59		56		30-150	B
BZ 198	61		66		30-150	B

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057025-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						
Hexachlorobenzene	ND	ND	ug/kg	NC		30 A
gamma-BHC	ND	ND	ug/kg	NC		30 A
Heptachlor	ND	ND	ug/kg	NC		30 A
Aldrin	ND	ND	ug/kg	NC		30 A
Heptachlor epoxide	ND	ND	ug/kg	NC		30 B
Oxychlordane	ND	ND	ug/kg	NC		30 B
trans-Chlordane	ND	ND	ug/kg	NC		30 A
Endosulfan I	ND	ND	ug/kg	NC		30 A
cis-Chlordane	ND	ND	ug/kg	NC		30 A
trans-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDE	ND	ND	ug/kg	NC		30 A
Dieldrin	ND	ND	ug/kg	NC		30 A
Endrin	ND	ND	ug/kg	NC		30 A
Endosulfan II	ND	ND	ug/kg	NC		30 A
4,4'-DDD	ND	ND	ug/kg	NC		30 A
cis-Nonachlor	ND	ND	ug/kg	NC		30 A
4,4'-DDT	ND	ND	ug/kg	NC		30 A
Methoxychlor	ND	ND	ug/kg	NC		30 A
Toxaphene	ND	ND	ug/kg	NC		30 A

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057025-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	38		30		30-150	A
BZ 198	48		33		30-150	A
DBOB	30		23	Q	30-150	B
BZ 198	41		34		30-150	B

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057006-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	42		40-140
4,4'-DDE	60		40-140
4,4'-DDD	78		40-140
DBOB (Surrogate)	52		30-150
DBOB (Surrogate)	60		30-150
BZ 198 (Surrogate)	61		30-150
BZ 198 (Surrogate)	64		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057016-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	49		40-140
4,4'-DDE	43		40-140
4,4'-DDD	58		40-140
DBOB (Surrogate)	59		30-150
DBOB (Surrogate)	63		30-150
BZ 198 (Surrogate)	55		30-150
BZ 198 (Surrogate)	58		30-150

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1057025-4

Parameter	% Recovery	Qual	QC Criteria
cis-Chlordane	32	Q	40-140
4,4'-DDE	49		40-140
4,4'-DDD	70		40-140
DBOB (Surrogate)	37		30-150
DBOB (Surrogate)	43		30-150
BZ 198 (Surrogate)	54		30-150
BZ 198 (Surrogate)	56		30-150

METALS

Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-01

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP A

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.05		mg/kg	0.100	0.034	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Cadmium, Total	0.039	J	mg/kg	0.040	0.011	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Chromium, Total	0.337	J	mg/kg	0.400	0.036	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Copper, Total	1.05		mg/kg	0.100	0.033	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Lead, Total	0.200		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Mercury, Total	0.0090	J	mg/kg	0.013	0.004	5	10/19/17 11:45	10/31/17 17:45	EPA 7474	1,7474	BV
Nickel, Total	0.262		mg/kg	0.100	0.037	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM
Zinc, Total	8.99		mg/kg	1.00	0.149	2	10/19/17 11:08	10/30/17 14:48	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-02

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP B

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.93		mg/kg	0.100	0.034	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Cadmium, Total	0.029	J	mg/kg	0.040	0.011	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Chromium, Total	0.451		mg/kg	0.400	0.036	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Copper, Total	1.23		mg/kg	0.100	0.033	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Lead, Total	0.221		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Mercury, Total	0.018		mg/kg	0.013	0.004	5	10/19/17 11:45	10/31/17 17:58	EPA 7474	1,7474	BV
Nickel, Total	0.302		mg/kg	0.100	0.037	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM
Zinc, Total	8.61		mg/kg	1.00	0.149	2	10/19/17 11:08	10/30/17 14:52	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-03

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP C

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.09		mg/kg	0.100	0.034	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Cadmium, Total	0.031	J	mg/kg	0.040	0.011	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Chromium, Total	0.717		mg/kg	0.400	0.036	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Copper, Total	1.28		mg/kg	0.100	0.033	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Lead, Total	0.320		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Mercury, Total	0.020		mg/kg	0.013	0.004	5	10/19/17 11:45	10/31/17 18:00	EPA 7474	1,7474	BV
Nickel, Total	0.399		mg/kg	0.100	0.037	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM
Zinc, Total	9.51		mg/kg	1.00	0.149	2	10/19/17 11:08	10/30/17 14:56	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-04

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP D

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.84		mg/kg	0.091	0.031	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Cadmium, Total	0.035	J	mg/kg	0.036	0.010	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Chromium, Total	0.273	J	mg/kg	0.364	0.033	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Copper, Total	1.24		mg/kg	0.091	0.030	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Lead, Total	0.152		mg/kg	0.036	0.005	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Mercury, Total	0.019		mg/kg	0.011	0.003	5	10/19/17 11:45	10/31/17 18:03	EPA 7474	1,7474	BV
Nickel, Total	0.214		mg/kg	0.091	0.034	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM
Zinc, Total	8.08		mg/kg	0.909	0.135	2	10/19/17 11:08	10/30/17 15:14	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-05

Date Collected: 10/04/17 16:20

Client ID: NV NATIVE BACKGROUND REP E

Date Received: 10/05/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.05		mg/kg	0.093	0.032	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Cadmium, Total	0.031	J	mg/kg	0.037	0.010	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Chromium, Total	0.295	J	mg/kg	0.374	0.034	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Copper, Total	0.975		mg/kg	0.093	0.031	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Lead, Total	0.173		mg/kg	0.037	0.005	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Mercury, Total	0.017		mg/kg	0.012	0.003	5	10/19/17 11:45	10/31/17 18:10	EPA 7474	1,7474	BV
Nickel, Total	0.216		mg/kg	0.093	0.035	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM
Zinc, Total	8.14		mg/kg	0.934	0.139	2	10/19/17 11:08	10/30/17 15:18	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-06

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.94		mg/kg	0.098	0.034	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Cadmium, Total	0.065		mg/kg	0.039	0.010	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Chromium, Total	0.078	J	mg/kg	0.392	0.035	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Copper, Total	1.18		mg/kg	0.098	0.033	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Lead, Total	0.229		mg/kg	0.039	0.006	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Mercury, Total	0.005	J	mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 16:46	EPA 7474	1,7474	BV
Nickel, Total	0.069	J	mg/kg	0.098	0.037	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM
Zinc, Total	7.45		mg/kg	0.980	0.146	2	10/25/17 12:07	10/30/17 15:14	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-07

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.16		mg/kg	0.095	0.033	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Cadmium, Total	0.034	J	mg/kg	0.038	0.010	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Chromium, Total	0.082	J	mg/kg	0.381	0.034	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Copper, Total	1.08		mg/kg	0.095	0.032	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Lead, Total	0.084		mg/kg	0.038	0.006	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Mercury, Total	0.017		mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 16:48	EPA 7474	1,7474	BV
Nickel, Total	0.088	J	mg/kg	0.095	0.035	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM
Zinc, Total	6.82		mg/kg	0.952	0.142	2	10/25/17 12:07	10/30/17 15:18	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-08

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.73		mg/kg	0.098	0.034	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Cadmium, Total	0.046		mg/kg	0.039	0.010	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Chromium, Total	0.067	J	mg/kg	0.392	0.035	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Copper, Total	0.852		mg/kg	0.098	0.033	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Lead, Total	0.148		mg/kg	0.039	0.006	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Mercury, Total	0.005	J	mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 16:51	EPA 7474	1,7474	BV
Nickel, Total	0.084	J	mg/kg	0.098	0.037	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM
Zinc, Total	7.02		mg/kg	0.980	0.146	2	10/25/17 12:07	10/30/17 15:22	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-09

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	0.594		mg/kg	0.094	0.032	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.038	0.010	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Chromium, Total	0.038	J	mg/kg	0.377	0.034	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Copper, Total	0.277		mg/kg	0.094	0.032	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Lead, Total	0.022	J	mg/kg	0.038	0.005	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 16:58	EPA 7474	1,7474	BV
Nickel, Total	ND		mg/kg	0.094	0.035	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM
Zinc, Total	1.92		mg/kg	0.943	0.140	2	10/25/17 12:07	10/30/17 15:26	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-10

Date Collected: 09/29/17 16:00

Client ID: NV LABORATORY CONTROL REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.11		mg/kg	0.098	0.034	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Cadmium, Total	0.040		mg/kg	0.039	0.010	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Chromium, Total	0.058	J	mg/kg	0.392	0.035	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Copper, Total	0.778		mg/kg	0.098	0.033	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Lead, Total	0.126		mg/kg	0.039	0.006	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 17:01	EPA 7474	1,7474	BV
Nickel, Total	0.110		mg/kg	0.098	0.037	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM
Zinc, Total	6.31		mg/kg	0.980	0.146	2	10/25/17 12:07	10/30/17 15:30	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-11

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.94		mg/kg	0.094	0.032	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Cadmium, Total	0.037	J	mg/kg	0.038	0.010	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Chromium, Total	0.053	J	mg/kg	0.377	0.034	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Copper, Total	0.889		mg/kg	0.094	0.032	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Lead, Total	0.160		mg/kg	0.038	0.005	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 17:03	EPA 7474	1,7474	BV
Nickel, Total	0.094	J	mg/kg	0.094	0.035	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM
Zinc, Total	6.01		mg/kg	0.943	0.140	2	10/25/17 12:07	10/30/17 15:45	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-12

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.32		mg/kg	0.100	0.034	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Cadmium, Total	0.048		mg/kg	0.040	0.011	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Chromium, Total	0.048	J	mg/kg	0.400	0.036	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Copper, Total	1.02		mg/kg	0.100	0.033	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Lead, Total	0.205		mg/kg	0.040	0.006	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.013	0.004	5	10/25/17 12:07	10/31/17 17:06	EPA 7474	1,7474	BV
Nickel, Total	0.063	J	mg/kg	0.100	0.037	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM
Zinc, Total	6.64		mg/kg	1.00	0.149	2	10/25/17 12:07	10/30/17 15:49	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-13

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.39		mg/kg	0.093	0.032	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Cadmium, Total	0.039		mg/kg	0.037	0.010	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Chromium, Total	0.040	J	mg/kg	0.370	0.033	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Copper, Total	1.13		mg/kg	0.093	0.031	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Lead, Total	0.122		mg/kg	0.037	0.005	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 17:08	EPA 7474	1,7474	BV
Nickel, Total	0.125		mg/kg	0.093	0.034	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM
Zinc, Total	6.14		mg/kg	0.926	0.138	2	10/25/17 12:07	10/30/17 15:52	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-14

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.60		mg/kg	0.097	0.033	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Cadmium, Total	0.023	J	mg/kg	0.039	0.010	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Chromium, Total	0.081	J	mg/kg	0.388	0.035	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Copper, Total	0.960		mg/kg	0.097	0.032	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Lead, Total	0.072		mg/kg	0.039	0.006	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Mercury, Total	0.014		mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 17:21	EPA 7474	1,7474	BV
Nickel, Total	0.171		mg/kg	0.097	0.036	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM
Zinc, Total	5.40		mg/kg	0.971	0.145	2	10/25/17 12:07	10/30/17 15:56	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-15

Date Collected: 09/29/17 16:00

Client ID: NV CLDS REFERENCE SEDIMENT REP

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.04		mg/kg	0.099	0.034	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Cadmium, Total	0.022	J	mg/kg	0.040	0.010	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Chromium, Total	0.063	J	mg/kg	0.396	0.036	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Copper, Total	1.11		mg/kg	0.099	0.033	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Lead, Total	0.076		mg/kg	0.040	0.006	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Mercury, Total	0.014		mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 17:23	EPA 7474	1,7474	BV
Nickel, Total	0.102		mg/kg	0.099	0.037	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM
Zinc, Total	6.10		mg/kg	0.990	0.148	2	10/25/17 12:07	10/30/17 16:00	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-16

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.17		mg/kg	0.095	0.033	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038	J	mg/kg	0.038	0.010	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Chromium, Total	0.049	J	mg/kg	0.381	0.034	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Copper, Total	0.682		mg/kg	0.095	0.032	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Lead, Total	0.087		mg/kg	0.038	0.006	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 17:25	EPA 7474	1,7474	BV
Nickel, Total	0.088	J	mg/kg	0.095	0.035	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM
Zinc, Total	5.79		mg/kg	0.952	0.142	2	10/25/17 12:07	10/30/17 16:04	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-17

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.28		mg/kg	0.100	0.034	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Cadmium, Total	0.043		mg/kg	0.040	0.011	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Chromium, Total	0.051	J	mg/kg	0.400	0.036	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Copper, Total	0.909		mg/kg	0.100	0.033	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Lead, Total	0.140		mg/kg	0.040	0.006	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.013	0.004	5	10/25/17 12:07	10/31/17 17:28	EPA 7474	1,7474	BV
Nickel, Total	0.084	J	mg/kg	0.100	0.037	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM
Zinc, Total	6.40		mg/kg	1.00	0.149	2	10/25/17 12:07	10/30/17 16:08	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-18

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.02		mg/kg	0.098	0.034	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Cadmium, Total	0.056		mg/kg	0.039	0.010	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Chromium, Total	0.079	J	mg/kg	0.392	0.035	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Copper, Total	0.798		mg/kg	0.098	0.033	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Lead, Total	0.140		mg/kg	0.039	0.006	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 17:30	EPA 7474	1,7474	BV
Nickel, Total	0.093	J	mg/kg	0.098	0.037	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM
Zinc, Total	5.78		mg/kg	0.980	0.146	2	10/25/17 12:07	10/30/17 16:11	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-19

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.01		mg/kg	0.093	0.032	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Cadmium, Total	0.024	J	mg/kg	0.037	0.010	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Chromium, Total	0.051	J	mg/kg	0.370	0.033	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Copper, Total	0.987		mg/kg	0.093	0.031	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Lead, Total	0.059		mg/kg	0.037	0.005	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Mercury, Total	0.019		mg/kg	0.012	0.003	5	10/19/17 11:45	10/31/17 18:13	EPA 7474	1,7474	BV
Nickel, Total	0.073	J	mg/kg	0.093	0.034	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM
Zinc, Total	7.30		mg/kg	0.926	0.138	2	10/19/17 11:08	10/30/17 15:22	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-20

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 1 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.36		mg/kg	0.092	0.032	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Cadmium, Total	0.033	J	mg/kg	0.037	0.010	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Chromium, Total	0.044	J	mg/kg	0.367	0.033	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Copper, Total	0.884		mg/kg	0.092	0.031	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Lead, Total	0.066		mg/kg	0.037	0.005	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Mercury, Total	0.011	J	mg/kg	0.012	0.003	5	10/19/17 11:45	10/31/17 18:15	EPA 7474	1,7474	BV
Nickel, Total	0.086	J	mg/kg	0.092	0.034	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM
Zinc, Total	6.88		mg/kg	0.917	0.137	2	10/19/17 11:08	10/30/17 15:26	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-21

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 2 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.95		mg/kg	0.099	0.034	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Cadmium, Total	0.042		mg/kg	0.040	0.010	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Chromium, Total	0.066	J	mg/kg	0.396	0.036	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Copper, Total	1.05		mg/kg	0.099	0.033	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Lead, Total	0.083		mg/kg	0.040	0.006	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Mercury, Total	0.016		mg/kg	0.012	0.004	5	10/25/17 12:07	10/31/17 16:33	EPA 7474	1,7474	BV
Nickel, Total	0.132		mg/kg	0.099	0.037	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM
Zinc, Total	6.41		mg/kg	0.990	0.148	2	10/25/17 12:07	10/30/17 14:24	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-22

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 2 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.32		mg/kg	0.098	0.034	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Cadmium, Total	0.046		mg/kg	0.039	0.010	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Chromium, Total	0.050	J	mg/kg	0.392	0.035	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Copper, Total	1.00		mg/kg	0.098	0.033	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Lead, Total	0.136		mg/kg	0.039	0.006	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:18	EPA 7474	1,7474	BV
Nickel, Total	0.082	J	mg/kg	0.098	0.037	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM
Zinc, Total	6.80		mg/kg	0.980	0.146	2	10/19/17 11:08	10/30/17 15:30	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-23

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 2 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.46		mg/kg	0.097	0.033	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Cadmium, Total	0.055		mg/kg	0.039	0.010	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Chromium, Total	0.040	J	mg/kg	0.388	0.035	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Copper, Total	0.917		mg/kg	0.097	0.032	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Lead, Total	0.146		mg/kg	0.039	0.006	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:20	EPA 7474	1,7474	BV
Nickel, Total	0.051	J	mg/kg	0.097	0.036	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM
Zinc, Total	7.08		mg/kg	0.971	0.145	2	10/19/17 11:08	10/30/17 15:35	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-24

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 2 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.20		mg/kg	0.098	0.034	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Cadmium, Total	0.036	J	mg/kg	0.039	0.010	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Chromium, Total	0.038	J	mg/kg	0.392	0.035	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Copper, Total	0.930		mg/kg	0.098	0.033	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Lead, Total	0.119		mg/kg	0.039	0.006	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:27	EPA 7474	1,7474	BV
Nickel, Total	0.065	J	mg/kg	0.098	0.037	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM
Zinc, Total	5.87		mg/kg	0.980	0.146	2	10/19/17 11:08	10/30/17 15:39	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-25

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 2 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.56		mg/kg	0.098	0.034	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Cadmium, Total	0.043		mg/kg	0.039	0.010	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.392	0.035	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Copper, Total	1.53		mg/kg	0.098	0.033	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Lead, Total	0.205		mg/kg	0.039	0.006	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:30	EPA 7474	1,7474	BV
Nickel, Total	0.073	J	mg/kg	0.098	0.037	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM
Zinc, Total	7.22		mg/kg	0.980	0.146	2	10/19/17 11:08	10/30/17 15:43	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-26

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 3 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.14		mg/kg	0.099	0.034	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Cadmium, Total	0.034	J	mg/kg	0.040	0.010	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Chromium, Total	0.042	J	mg/kg	0.396	0.036	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Copper, Total	0.967		mg/kg	0.099	0.033	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Lead, Total	0.115		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Mercury, Total	0.010	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:32	EPA 7474	1,7474	BV
Nickel, Total	0.095	J	mg/kg	0.099	0.037	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM
Zinc, Total	7.09		mg/kg	0.990	0.148	2	10/19/17 11:08	10/30/17 15:47	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-27

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 3 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.07		mg/kg	0.101	0.035	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Cadmium, Total	0.030	J	mg/kg	0.040	0.011	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Chromium, Total	0.051	J	mg/kg	0.404	0.036	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Copper, Total	0.912		mg/kg	0.101	0.034	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Lead, Total	0.057		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Mercury, Total	0.015		mg/kg	0.013	0.004	5	10/19/17 11:45	10/31/17 18:35	EPA 7474	1,7474	BV
Nickel, Total	0.088	J	mg/kg	0.101	0.038	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM
Zinc, Total	7.06		mg/kg	1.01	0.150	2	10/19/17 11:08	10/30/17 15:51	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-28

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 3 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.29		mg/kg	0.096	0.033	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038	J	mg/kg	0.039	0.010	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.385	0.035	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Copper, Total	1.20		mg/kg	0.096	0.032	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Lead, Total	0.134		mg/kg	0.039	0.006	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.012	0.003	5	10/19/17 11:45	10/31/17 18:37	EPA 7474	1,7474	BV
Nickel, Total	0.079	J	mg/kg	0.096	0.036	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM
Zinc, Total	6.32		mg/kg	0.962	0.143	2	10/19/17 11:08	10/30/17 16:24	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-29

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 3 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.40		mg/kg	0.099	0.034	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Cadmium, Total	0.031	J	mg/kg	0.040	0.010	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Chromium, Total	0.040	J	mg/kg	0.396	0.036	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Copper, Total	0.641		mg/kg	0.099	0.033	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Lead, Total	0.091		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.004	5	10/19/17 11:45	10/31/17 18:40	EPA 7474	1,7474	BV
Nickel, Total	0.106		mg/kg	0.099	0.037	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM
Zinc, Total	6.54		mg/kg	0.990	0.148	2	10/19/17 11:08	10/30/17 16:28	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-30

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 3 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.81		mg/kg	0.100	0.034	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Cadmium, Total	0.044		mg/kg	0.040	0.011	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Chromium, Total	0.066	J	mg/kg	0.400	0.036	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Copper, Total	1.10		mg/kg	0.100	0.033	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Lead, Total	0.115		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Mercury, Total	0.018		mg/kg	0.013	0.004	5	10/27/17 11:00	11/02/17 17:04	EPA 7474	1,7474	BV
Nickel, Total	0.097	J	mg/kg	0.100	0.037	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM
Zinc, Total	6.17		mg/kg	1.00	0.149	2	10/27/17 11:00	10/31/17 15:18	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-31

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 4 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.99		mg/kg	0.099	0.034	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Cadmium, Total	0.042		mg/kg	0.040	0.010	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Chromium, Total	0.040	J	mg/kg	0.396	0.036	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Copper, Total	1.13		mg/kg	0.099	0.033	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Lead, Total	0.126		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Mercury, Total	0.013		mg/kg	0.012	0.004	5	10/27/17 11:00	11/02/17 17:06	EPA 7474	1,7474	BV
Nickel, Total	0.063	J	mg/kg	0.099	0.037	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM
Zinc, Total	6.37		mg/kg	0.990	0.148	2	10/27/17 11:00	10/31/17 15:22	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-32

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 4 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.86		mg/kg	0.099	0.034	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Cadmium, Total	0.028	J	mg/kg	0.040	0.010	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Chromium, Total	0.058	J	mg/kg	0.396	0.036	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Copper, Total	1.26		mg/kg	0.099	0.033	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Lead, Total	0.087		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Mercury, Total	0.014		mg/kg	0.012	0.004	5	10/27/17 11:00	11/02/17 17:09	EPA 7474	1,7474	BV
Nickel, Total	0.085	J	mg/kg	0.099	0.037	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM
Zinc, Total	6.66		mg/kg	0.990	0.148	2	10/27/17 11:00	10/31/17 15:26	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-33

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 4 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.15		mg/kg	0.097	0.033	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Cadmium, Total	0.053		mg/kg	0.039	0.010	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.388	0.035	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Copper, Total	1.26		mg/kg	0.097	0.032	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Lead, Total	0.165		mg/kg	0.039	0.006	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.004	5	10/27/17 11:00	11/02/17 17:11	EPA 7474	1,7474	BV
Nickel, Total	0.063	J	mg/kg	0.097	0.036	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM
Zinc, Total	6.22		mg/kg	0.971	0.145	2	10/27/17 11:00	10/31/17 15:29	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-34

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 4 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.90		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Cadmium, Total	0.028	J	mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Chromium, Total	0.068	J	mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Copper, Total	1.45		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Lead, Total	0.094		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Mercury, Total	0.015		mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 17:54	EPA 7474	1,7474	BV
Nickel, Total	0.106		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM
Zinc, Total	7.26		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:05	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-35

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 4 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.43		mg/kg	0.095	0.033	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Cadmium, Total	0.049		mg/kg	0.038	0.010	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Chromium, Total	0.035	J	mg/kg	0.381	0.034	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Copper, Total	1.08		mg/kg	0.095	0.032	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Lead, Total	0.150		mg/kg	0.038	0.006	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/26/17 13:34	11/02/17 17:57	EPA 7474	1,7474	BV
Nickel, Total	0.086	J	mg/kg	0.095	0.035	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM
Zinc, Total	7.08		mg/kg	0.952	0.142	2	10/26/17 13:34	10/30/17 17:09	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-36

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 5 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.14		mg/kg	0.099	0.034	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038	J	mg/kg	0.040	0.010	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.396	0.036	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Copper, Total	0.677		mg/kg	0.099	0.033	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Lead, Total	0.146		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.004	5	10/27/17 11:00	11/02/17 17:14	EPA 7474	1,7474	BV
Nickel, Total	0.062	J	mg/kg	0.099	0.037	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM
Zinc, Total	5.65		mg/kg	0.990	0.148	2	10/27/17 11:00	10/31/17 15:56	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-37

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 5 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.37		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Cadmium, Total	0.041		mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Chromium, Total	0.044	J	mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Copper, Total	0.801		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Lead, Total	0.113		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 17:59	EPA 7474	1,7474	BV
Nickel, Total	0.075	J	mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM
Zinc, Total	6.40		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:13	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-38

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 5 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.18		mg/kg	0.096	0.033	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Cadmium, Total	0.039		mg/kg	0.039	0.010	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.385	0.035	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Copper, Total	1.20		mg/kg	0.096	0.032	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Lead, Total	0.173		mg/kg	0.039	0.006	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.012	0.003	5	10/26/17 13:34	11/02/17 18:02	EPA 7474	1,7474	BV
Nickel, Total	0.086	J	mg/kg	0.096	0.036	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM
Zinc, Total	7.09		mg/kg	0.962	0.143	2	10/26/17 13:34	10/30/17 17:17	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-39

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 5 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.25		mg/kg	0.096	0.033	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Cadmium, Total	0.041		mg/kg	0.039	0.010	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.385	0.035	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Copper, Total	0.876		mg/kg	0.096	0.032	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Lead, Total	0.121		mg/kg	0.039	0.006	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/27/17 11:00	11/02/17 17:16	EPA 7474	1,7474	BV
Nickel, Total	0.069	J	mg/kg	0.096	0.036	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM
Zinc, Total	5.74		mg/kg	0.962	0.143	2	10/27/17 11:00	10/31/17 16:00	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-40

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 5 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.21		mg/kg	0.100	0.034	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Cadmium, Total	0.033	J	mg/kg	0.040	0.011	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Chromium, Total	0.055	J	mg/kg	0.400	0.036	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Copper, Total	0.906		mg/kg	0.100	0.033	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Lead, Total	0.139		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.013	0.004	5	10/27/17 11:00	11/02/17 17:19	EPA 7474	1,7474	BV
Nickel, Total	0.067	J	mg/kg	0.100	0.037	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM
Zinc, Total	6.36		mg/kg	1.00	0.149	2	10/27/17 11:00	10/31/17 16:04	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-41

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 6 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.12		mg/kg	0.099	0.034	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Cadmium, Total	0.036	J	mg/kg	0.040	0.010	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Chromium, Total	0.128	J	mg/kg	0.396	0.036	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Copper, Total	0.888		mg/kg	0.099	0.033	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Lead, Total	0.132		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Mercury, Total	0.004	J	mg/kg	0.012	0.004	5	10/27/17 11:00	11/02/17 16:41	EPA 7474	1,7474	BV
Nickel, Total	0.087	J	mg/kg	0.099	0.037	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM
Zinc, Total	6.23		mg/kg	0.990	0.148	2	10/27/17 11:00	10/31/17 14:59	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-42

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 6 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.95		mg/kg	0.098	0.034	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Cadmium, Total	0.036	J	mg/kg	0.039	0.010	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Chromium, Total	0.042	J	mg/kg	0.392	0.035	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Copper, Total	1.04		mg/kg	0.098	0.033	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Lead, Total	0.064		mg/kg	0.039	0.006	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Mercury, Total	0.013		mg/kg	0.012	0.004	5	10/26/17 13:34	11/02/17 18:04	EPA 7474	1,7474	BV
Nickel, Total	0.087	J	mg/kg	0.098	0.037	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM
Zinc, Total	7.05		mg/kg	0.980	0.146	2	10/26/17 13:34	10/30/17 17:21	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-43

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 6 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.04		mg/kg	0.095	0.033	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Cadmium, Total	0.035	J	mg/kg	0.038	0.010	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Chromium, Total	0.078	J	mg/kg	0.381	0.034	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Copper, Total	1.08		mg/kg	0.095	0.032	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Lead, Total	0.086		mg/kg	0.038	0.006	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Mercury, Total	0.011	J	mg/kg	0.012	0.003	5	10/25/17 12:07	10/31/17 17:33	EPA 7474	1,7474	BV
Nickel, Total	0.128		mg/kg	0.095	0.035	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM
Zinc, Total	6.77		mg/kg	0.952	0.142	2	10/25/17 12:07	10/30/17 16:15	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-44

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 6 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.19		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Cadmium, Total	0.035	J	mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Chromium, Total	0.053	J	mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Copper, Total	1.02		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Lead, Total	0.067		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Mercury, Total	0.012	J	mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 18:07	EPA 7474	1,7474	BV
Nickel, Total	0.151		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM
Zinc, Total	6.59		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:25	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-45

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 6 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.89		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Cadmium, Total	0.037	J	mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Chromium, Total	0.098	J	mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Copper, Total	1.22		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Lead, Total	0.128		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Mercury, Total	0.013		mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 18:14	EPA 7474	1,7474	BV
Nickel, Total	0.124		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM
Zinc, Total	7.16		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:42	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-46

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 7 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.02		mg/kg	0.095	0.033	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Cadmium, Total	0.038	J	mg/kg	0.038	0.010	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Chromium, Total	0.048	J	mg/kg	0.381	0.034	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Copper, Total	0.936		mg/kg	0.095	0.032	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Lead, Total	0.104		mg/kg	0.038	0.006	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Mercury, Total	0.016		mg/kg	0.012	0.003	5	10/26/17 13:34	11/02/17 18:17	EPA 7474	1,7474	BV
Nickel, Total	0.102		mg/kg	0.095	0.035	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM
Zinc, Total	7.72		mg/kg	0.952	0.142	2	10/26/17 13:34	10/30/17 17:46	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-47

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 7 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.09		mg/kg	0.097	0.033	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Cadmium, Total	0.035	J	mg/kg	0.039	0.010	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.388	0.035	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Copper, Total	0.773		mg/kg	0.097	0.032	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Lead, Total	0.125		mg/kg	0.039	0.006	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.004	5	10/26/17 13:34	11/02/17 18:19	EPA 7474	1,7474	BV
Nickel, Total	0.076	J	mg/kg	0.097	0.036	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM
Zinc, Total	17.0		mg/kg	0.971	0.145	2	10/26/17 13:34	10/30/17 17:50	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-48

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 7 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.03		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Cadmium, Total	0.033	J	mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Copper, Total	0.902		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Lead, Total	0.087		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Mercury, Total	0.012	J	mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 18:21	EPA 7474	1,7474	BV
Nickel, Total	0.104		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM
Zinc, Total	6.38		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:54	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-49

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 7 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.02		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Cadmium, Total	0.042		mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Chromium, Total	0.038	J	mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Copper, Total	1.10		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Lead, Total	0.120		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Mercury, Total	0.013		mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 18:24	EPA 7474	1,7474	BV
Nickel, Total	0.109		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM
Zinc, Total	6.86		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 17:58	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-50

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 7 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.53		mg/kg	0.096	0.033	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Cadmium, Total	0.040		mg/kg	0.039	0.010	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Chromium, Total	0.054	J	mg/kg	0.385	0.035	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Copper, Total	0.990		mg/kg	0.096	0.032	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Lead, Total	0.145		mg/kg	0.039	0.006	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Mercury, Total	0.010	J	mg/kg	0.012	0.003	5	10/26/17 13:34	11/02/17 18:26	EPA 7474	1,7474	BV
Nickel, Total	0.135		mg/kg	0.096	0.036	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM
Zinc, Total	7.28		mg/kg	0.962	0.143	2	10/26/17 13:34	10/30/17 18:02	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-51

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 8 REP A

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.40		mg/kg	0.095	0.033	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Cadmium, Total	0.041		mg/kg	0.038	0.010	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Chromium, Total	0.041	J	mg/kg	0.381	0.034	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Copper, Total	0.851		mg/kg	0.095	0.032	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Lead, Total	0.185		mg/kg	0.038	0.006	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/26/17 13:34	11/02/17 18:29	EPA 7474	1,7474	BV
Nickel, Total	0.140		mg/kg	0.095	0.035	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM
Zinc, Total	7.16		mg/kg	0.952	0.142	2	10/26/17 13:34	10/30/17 18:06	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-52

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 8 REP B

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.58		mg/kg	0.098	0.034	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Cadmium, Total	0.049		mg/kg	0.039	0.010	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Chromium, Total	0.038	J	mg/kg	0.392	0.035	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Copper, Total	0.818		mg/kg	0.098	0.033	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Lead, Total	0.121		mg/kg	0.039	0.006	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.004	5	10/26/17 13:34	11/02/17 18:31	EPA 7474	1,7474	BV
Nickel, Total	0.131		mg/kg	0.098	0.037	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM
Zinc, Total	7.18		mg/kg	0.980	0.146	2	10/26/17 13:34	10/30/17 18:11	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-53

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 8 REP C

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.13		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Cadmium, Total	0.037	J	mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Copper, Total	0.827		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Lead, Total	0.117		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Mercury, Total	0.006	J	mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 17:36	EPA 7474	1,7474	BV
Nickel, Total	0.101		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM
Zinc, Total	6.84		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 16:20	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-54

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 8 REP D

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.22		mg/kg	0.100	0.034	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Cadmium, Total	0.039	J	mg/kg	0.040	0.011	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Copper, Total	0.780		mg/kg	0.100	0.033	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Lead, Total	0.159		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Mercury, Total	0.007	J	mg/kg	0.013	0.004	5	10/27/17 11:00	11/02/17 17:21	EPA 7474	1,7474	BV
Nickel, Total	0.082	J	mg/kg	0.100	0.037	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM
Zinc, Total	5.87		mg/kg	1.00	0.149	2	10/27/17 11:00	10/31/17 16:07	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-55

Date Collected: 09/29/17 16:00

Client ID: NV COMPOSITE 8 REP E

Date Received: 10/02/17

Sample Location: NEW HAVEN, CT

Field Prep: Not Specified

Matrix: Tissue

Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.26		mg/kg	0.094	0.032	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Cadmium, Total	0.037	J	mg/kg	0.038	0.010	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Chromium, Total	0.042	J	mg/kg	0.377	0.034	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Copper, Total	0.842		mg/kg	0.094	0.032	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Lead, Total	0.122		mg/kg	0.038	0.005	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Mercury, Total	0.008	J	mg/kg	0.012	0.003	5	10/27/17 11:00	11/02/17 17:24	EPA 7474	1,7474	BV
Nickel, Total	0.078	J	mg/kg	0.094	0.035	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM
Zinc, Total	5.58		mg/kg	0.943	0.140	2	10/27/17 11:00	10/31/17 16:11	EPA 3051A	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05,19-20,22-29 Batch: WG1054046-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/19/17 11:08	10/30/17 14:23	1,6020A	AM

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05,19-20,22-29 Batch: WG1054057-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/19/17 11:45	10/31/17 17:40	1,7474	BV

Prep Information

Digestion Method: EPA 7474

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 06-18,21,43 Batch: WG1056057-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/25/17 12:07	10/30/17 14:12	1,6020A	AM



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 06-18,21,43 Batch: WG1056076-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/25/17 12:07	10/31/17 16:28	1,7474	BV

Prep Information

Digestion Method: EPA 7474

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 34-35,37-38,42,44-53 Batch: WG1056489-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/26/17 13:34	10/30/17 16:03	1,6020A	AM

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 34-35,37-38,42,44-53 Batch: WG1056495-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/26/17 13:34	11/02/17 17:31	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 30-33,36,39-41,54-55 Batch: WG1056973-1										
Arsenic, Total	ND		mg/kg	0.100	0.034	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Cadmium, Total	ND		mg/kg	0.040	0.011	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Chromium, Total	ND		mg/kg	0.400	0.036	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Copper, Total	ND		mg/kg	0.100	0.033	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Lead, Total	ND		mg/kg	0.040	0.006	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Nickel, Total	ND		mg/kg	0.100	0.037	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM
Zinc, Total	ND		mg/kg	1.00	0.149	2	10/27/17 11:00	10/31/17 14:12	1,6020A	AM

Prep Information

Digestion Method: EPA 3051A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 30-33,36,39-41,54-55 Batch: WG1056974-1										
Mercury, Total	ND		mg/kg	0.013	0.004	5	10/27/17 11:00	11/02/17 16:36	1,7474	BV

Prep Information

Digestion Method: EPA 7474



Lab Control Sample Analysis**Batch Quality Control****Project Name:** USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 Batch: WG1054046-2								
Arsenic, Total	99		-		75-125	-		20
Cadmium, Total	103		-		75-125	-		20
Chromium, Total	100		-		75-125	-		20
Copper, Total	98		-		75-125	-		20
Lead, Total	98		-		75-125	-		20
Nickel, Total	98		-		75-125	-		20
Zinc, Total	99		-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 Batch: WG1054057-2 SRM Lot Number: HPHGAF								
Mercury, Total	89		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 Batch: WG1056057-2								
Arsenic, Total	100		-		75-125	-		20
Cadmium, Total	110		-		75-125	-		20
Chromium, Total	105		-		75-125	-		20
Copper, Total	104		-		75-125	-		20
Lead, Total	104		-		75-125	-		20
Nickel, Total	103		-		75-125	-		20
Zinc, Total	105		-		75-125	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 Batch: WG1056076-2 SRM Lot Number: HPHGAF					
Mercury, Total	93	-	80-120	-	20
Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 Batch: WG1056489-2					
Arsenic, Total	102	-	75-125	-	20
Cadmium, Total	104	-	75-125	-	20
Chromium, Total	102	-	75-125	-	20
Copper, Total	101	-	75-125	-	20
Lead, Total	98	-	75-125	-	20
Nickel, Total	100	-	75-125	-	20
Zinc, Total	102	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 Batch: WG1056495-2 SRM Lot Number: HPHGAF					
Mercury, Total	94	-	80-120	-	20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 Batch: WG1056973-2					
Arsenic, Total	99	-	75-125	-	20
Cadmium, Total	103	-	75-125	-	20
Chromium, Total	101	-	75-125	-	20
Copper, Total	99	-	75-125	-	20
Lead, Total	104	-	75-125	-	20
Nickel, Total	99	-	75-125	-	20
Zinc, Total	100	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 Batch: WG1056974-2 SRM Lot Number: HPHGAF					
Mercury, Total	111	-	80-120	-	20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 QC Batch ID: WG1054046-3 WG1054046-4 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A												
Arsenic, Total	3.05	11.6	14.4	97		14.0	98		75-125	3		20
Cadmium, Total	0.039J	4.95	5.07	102		4.93	103		75-125	3		20
Chromium, Total	0.337J	19.4	18.8	97		18.3	98		75-125	3		20
Copper, Total	1.05	24.3	24.2	95		23.1	94		75-125	5		20
Lead, Total	0.200	49.5	48.1	97		46.8	98		75-125	3		20
Nickel, Total	0.262	48.5	46.3	95		45.3	96		75-125	2		20
Zinc, Total	8.99	48.5	55.4	96		54.1	96		75-125	2		20

Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 QC Batch ID: WG1054057-3 WG1054057-4 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A

Mercury, Total	0.0090J	0.607	0.570	94		0.572	93		80-120	0		20
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Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 QC Batch ID: WG1056057-3 WG1056057-4 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A

Arsenic, Total	1.95	11.8	13.3	96		13.2	96		75-125	1		20
Cadmium, Total	0.042	5	5.15	102		5.34	106		75-125	4		20
Chromium, Total	0.066J	19.6	18.9	96		20.1	102		75-125	6		20
Copper, Total	1.05	24.5	24.9	97		26.1	102		75-125	5		20
Lead, Total	0.083	50	49.6	99		51.8	103		75-125	4		20
Nickel, Total	0.132	49	46.8	95		50.2	102		75-125	7		20
Zinc, Total	6.41	49	54.1	97		58.1	105		75-125	7		20

Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 QC Batch ID: WG1056076-3 WG1056076-4 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A

Mercury, Total	0.016	0.613	0.571	91	0.562	90	80-120	2	20
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Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 QC Batch ID: WG1056489-3 WG1056489-4 QC Sample: L1735250-53 Client ID: NV COMPOSITE 8 REP C

Arsenic, Total	2.13	11.6	13.9	101	13.7	102	75-125	1	20
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Cadmium, Total	0.037J	4.95	5.30	107	5.24	109	75-125	1	20
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Chromium, Total	ND	19.4	19.2	99	18.7	99	75-125	3	20
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Copper, Total	0.827	24.3	25.0	100	24.7	101	75-125	1	20
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Lead, Total	0.117	49.5	48.2	97	48.0	100	75-125	0	20
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Nickel, Total	0.101	48.5	48.2	99	47.6	101	75-125	1	20
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Zinc, Total	6.84	48.5	55.5	100	55.1	102	75-125	1	20
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Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 QC Batch ID: WG1056495-3 WG1056495-4 QC Sample: L1735250-53 Client ID: NV COMPOSITE 8 REP C

Mercury, Total	0.006J	0.584	0.623	107	0.670	110	80-120	7	20
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Matrix Spike Analysis **Batch Quality Control**

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 QC Batch ID: WG1056973-3 WG1056973-4 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A									
Arsenic, Total	2.12	11.8	13.3	95	13.5	99	75-125	1	20
Cadmium, Total	0.036J	5	4.98	100	5.08	104	75-125	2	20
Chromium, Total	0.128J	19.6	18.2	93	18.7	97	75-125	3	20
Copper, Total	0.888	24.5	23.5	92	24.1	96	75-125	3	20
Lead, Total	0.132	50	49.2	98	50.2	102	75-125	2	20
Nickel, Total	0.087J	49	44.2	90	47.7	99	75-125	8	20
Zinc, Total	6.23	49	51.6	92	53.0	97	75-125	3	20
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 QC Batch ID: WG1056974-3 WG1056974-4 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A									
Mercury, Total	0.004J	0.619	0.507	82	0.483	80	80-120	5	20

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 QC Batch ID: WG1054046-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
Arsenic, Total	3.05	2.96	mg/kg	3		20
Cadmium, Total	0.039J	0.032J	mg/kg	NC		20
Chromium, Total	0.337J	0.333J	mg/kg	NC		20
Copper, Total	1.05	1.00	mg/kg	5		20
Lead, Total	0.200	0.173	mg/kg	14		20
Nickel, Total	0.262	0.258	mg/kg	2		20
Zinc, Total	8.99	8.30	mg/kg	8		20
Total Metals - Mansfield Lab Associated sample(s): 01-05,19-20,22-29 QC Batch ID: WG1054057-5 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
Mercury, Total	0.0090J	0.014	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 QC Batch ID: WG1056057-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Arsenic, Total	1.95	1.84	mg/kg	6		20
Cadmium, Total	0.042	0.032J	mg/kg	NC		20
Chromium, Total	0.066J	0.077J	mg/kg	NC		20
Copper, Total	1.05	1.16	mg/kg	10		20
Lead, Total	0.083	0.095	mg/kg	13		20
Nickel, Total	0.132	0.094J	mg/kg	NC		20
Zinc, Total	6.41	7.22	mg/kg	12		20

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 06-18,21,43 QC Batch ID: WG1056076-5 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A					
Mercury, Total	0.016	0.019	mg/kg	17	20
Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 QC Batch ID: WG1056489-5 QC Sample: L1735250-53 Client ID: NV COMPOSITE 8 REP C					
Arsenic, Total	2.13	0.362	mg/kg	142	Q 20
Cadmium, Total	0.037J	ND	mg/kg	NC	20
Chromium, Total	ND	ND	mg/kg	NC	20
Copper, Total	0.827	0.140	mg/kg	142	Q 20
Lead, Total	0.117	0.017J	mg/kg	NC	20
Nickel, Total	0.101	ND	mg/kg	NC	20
Zinc, Total	6.84	1.18	mg/kg	141	Q 20
Total Metals - Mansfield Lab Associated sample(s): 34-35,37-38,42,44-53 QC Batch ID: WG1056495-5 QC Sample: L1735250-53 Client ID: NV COMPOSITE 8 REP C					
Mercury, Total	0.006J	ND	mg/kg	NC	20

Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 QC Batch ID: WG1056973-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A					
Arsenic, Total	2.12	2.09	mg/kg	1	20
Cadmium, Total	0.036J	0.040	mg/kg	NC	20
Chromium, Total	0.128J	0.117J	mg/kg	NC	20
Copper, Total	0.888	0.841	mg/kg	5	20
Lead, Total	0.132	0.140	mg/kg	6	20
Nickel, Total	0.087J	0.103	mg/kg	NC	20
Zinc, Total	6.23	6.13	mg/kg	2	20
Total Metals - Mansfield Lab Associated sample(s): 30-33,36,39-41,54-55 QC Batch ID: WG1056974-5 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A					
Mercury, Total	0.004J	0.010J	mg/kg	NC	20

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1054046-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	89		65-139
Cadmium, Total	93		67-135
Copper, Total	95		65-138
Lead, Total	86		56-155
Zinc, Total	94		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1054057-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	102		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1056057-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	73		65-139
Cadmium, Total	88		67-135
Copper, Total	97		65-138
Lead, Total	110		56-155
Zinc, Total	78		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1056076-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	81		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1056489-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	88		65-139
Cadmium, Total	92		67-135
Copper, Total	90		65-138
Lead, Total	82		56-155
Zinc, Total	94		66-136

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1056495-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	110		41-183

Project Name: USACE/NHH FNP
Project Number: 60543021

Lab Number: L1735250
Report Date: 11/20/17

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG1056973-8

Parameter	% Recovery	Qual	QC Criteria
Arsenic, Total	83		65-139
Cadmium, Total	90		67-135
Copper, Total	95		65-138
Lead, Total	122		56-155
Zinc, Total	85		66-136

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**S.R.M. Standard Quality Control**

Standard Reference Material (SRM): WG1056974-15

Parameter	% Recovery	Qual	QC Criteria
Mercury, Total	92		41-183

INORGANICS & MISCELLANEOUS

Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-01
Client ID: NV NATIVE BACKGROUND REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 10/04/17 16:20
Date Received: 10/05/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.521		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-02
 Client ID: NV NATIVE BACKGROUND REP B
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 10/04/17 16:20
 Date Received: 10/05/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.558		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-03**Client ID:** NV NATIVE BACKGROUND REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 10/04/17 16:20**Date Received:** 10/05/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.707		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-04
Client ID: NV NATIVE BACKGROUND REP D
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 10/04/17 16:20
Date Received: 10/05/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.559		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-05
Client ID: NV NATIVE BACKGROUND REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 10/04/17 16:20
Date Received: 10/05/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.705		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-06
Client ID: NV LABORATORY CONTROL REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	1.02		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-07

Client ID: NV LABORATORY CONTROL REP B

Sample Location: NEW HAVEN, CT

Matrix: Tissue

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.771		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-08
Client ID: NV LABORATORY CONTROL REP C
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.871		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-09

Client ID: NV LABORATORY CONTROL REP D

Sample Location: NEW HAVEN, CT

Matrix: Tissue

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.714		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-10

Client ID: NV LABORATORY CONTROL REP E

Sample Location: NEW HAVEN, CT

Matrix: Tissue

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.860		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-11
Client ID: NV CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.702		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-12
 Client ID: NV CLDS REFERENCE SEDIMENT REP
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.894		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-13
Client ID: NV CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.817		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-14
 Client ID: NV CLDS REFERENCE SEDIMENT REP
 Sample Location: NEW HAVEN, CT
 Matrix: Tissue

Date Collected: 09/29/17 16:00
 Date Received: 10/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.505		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-15
Client ID: NV CLDS REFERENCE SEDIMENT REP
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.791		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-16**Client ID:** NV COMPOSITE 1 REP A**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	1.06		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-17**Client ID:** NV COMPOSITE 1 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.658		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-18**Client ID:** NV COMPOSITE 1 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	86.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	1.36		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-19**Client ID:** NV COMPOSITE 1 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	0.914		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-20**Client ID:** NV COMPOSITE 1 REP E**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 13:15	121,2540G	SP
Percent Lipids	1.21		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-21**Client ID:** NV COMPOSITE 2 REP A**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.621		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-22**Client ID:** NV COMPOSITE 2 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.21		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-23**Client ID:** NV COMPOSITE 2 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.28		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-24**Client ID:** NV COMPOSITE 2 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.17		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-25
Client ID: NV COMPOSITE 2 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.15		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-26**Client ID:** NV COMPOSITE 3 REP A**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.04		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-27**Client ID:** NV COMPOSITE 3 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.874		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-28**Client ID:** NV COMPOSITE 3 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.675		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-29**Client ID:** NV COMPOSITE 3 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.30		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-30
Client ID: NV COMPOSITE 3 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.01		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-31
Client ID: NV COMPOSITE 4 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.07		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-32**Client ID:** NV COMPOSITE 4 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.858		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-33**Client ID:** NV COMPOSITE 4 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.972		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-34**Client ID:** NV COMPOSITE 4 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.972		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-35
Client ID: NV COMPOSITE 4 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.775		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

SAMPLE RESULTS

Lab ID: L1735250-36

Client ID: NV COMPOSITE 5 REP A

Sample Location: NEW HAVEN, CT

Matrix: Tissue

Date Collected: 09/29/17 16:00

Date Received: 10/02/17

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.64		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-37**Client ID:** NV COMPOSITE 5 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.39		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-38**Client ID:** NV COMPOSITE 5 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.62		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-39**Client ID:** NV COMPOSITE 5 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	1.31		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-40
Client ID: NV COMPOSITE 5 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 12:05	121,2540G	SP
Percent Lipids	0.934		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-41
Client ID: NV COMPOSITE 6 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.990		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-42**Client ID:** NV COMPOSITE 6 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.06		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-43**Client ID:** NV COMPOSITE 6 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.60		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-44**Client ID:** NV COMPOSITE 6 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	89.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.42		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-45
Client ID: NV COMPOSITE 6 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	90.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.795		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-46**Client ID:** NV COMPOSITE 7 REP A**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.56		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-47**Client ID:** NV COMPOSITE 7 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.40		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-48**Client ID:** NV COMPOSITE 7 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.832		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-49**Client ID:** NV COMPOSITE 7 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.00		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-50**Client ID:** NV COMPOSITE 7 REP E**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.20		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-51
Client ID: NV COMPOSITE 8 REP A
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.57		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-52**Client ID:** NV COMPOSITE 8 REP B**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.705		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-53**Client ID:** NV COMPOSITE 8 REP C**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	88.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.771		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS****Lab ID:** L1735250-54**Client ID:** NV COMPOSITE 8 REP D**Sample Location:** NEW HAVEN, CT**Matrix:** Tissue**Date Collected:** 09/29/17 16:00**Date Received:** 10/02/17**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	1.30		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP**Project Number:** 60543021**Lab Number:** L1735250**Report Date:** 11/20/17**SAMPLE RESULTS**

Lab ID: L1735250-55
Client ID: NV COMPOSITE 8 REP E
Sample Location: NEW HAVEN, CT
Matrix: Tissue

Date Collected: 09/29/17 16:00
Date Received: 10/02/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Moisture	87.0		%	0.100	0.100	1	-	10/30/17 00:15	121,2540G	SP
Percent Lipids	0.848		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Project Name: USACE/NHH FNP

Lab Number: L1735250

Project Number: 60543021

Report Date: 11/20/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab for sample(s): 01-20 Batch: WG1058135-1										
Percent Lipids	ND		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO
General Chemistry - Mansfield Lab for sample(s): 21-40 Batch: WG1058136-1										
Percent Lipids	ND		%	0.100	NA	1	-	11/01/17 00:00	111,-	KO
General Chemistry - Mansfield Lab for sample(s): 41-55 Batch: WG1059952-1										
Percent Lipids	ND		%	0.100	NA	1	-	11/06/17 00:00	111,-	AL



Lab Duplicate Analysis Batch Quality Control

Project Name: USACE/NHH FNP

Project Number: 60543021

Lab Number: L1735250

Report Date: 11/20/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1057659-1 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
Moisture	88.0	87.0	%	1		10
General Chemistry - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1057662-1 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Moisture	89.0	89.0	%	0		10
General Chemistry - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1057665-1 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						
Moisture	87.0	87.0	%	0		10
General Chemistry - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1058135-2 QC Sample: L1735250-01 Client ID: NV NATIVE BACKGROUND REP A						
Percent Lipids	0.521	0.521	%	0		20
General Chemistry - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG1058136-2 QC Sample: L1735250-21 Client ID: NV COMPOSITE 2 REP A						
Percent Lipids	0.621	0.583	%	6		20
General Chemistry - Mansfield Lab Associated sample(s): 41-55 QC Batch ID: WG1059952-2 QC Sample: L1735250-41 Client ID: NV COMPOSITE 6 REP A						
Percent Lipids	0.990	0.929	%	6		20

Project Name: USACE/NHH FNP**Lab Number:** L1735250**Project Number:** 60543021**Report Date:** 11/20/17**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
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A	Absent
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B	Absent
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C	Absent
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-01A	Glass 250ml/8oz unpreserved	C	NA		0.4	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-02A	Glass 250ml/8oz unpreserved	C	NA		0.4	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-03A	Glass 250ml/8oz unpreserved	C	NA		0.4	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-04A	Glass 250ml/8oz unpreserved	C	NA		0.4	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11201716:00
Lab Number: L1735250
Report Date: 11/20/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-05A	Glass 250ml/8oz unpreserved	C	NA		0.4	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-06A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-07A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-08A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-09A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-10A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11201716:00
Lab Number: L1735250
Report Date: 11/20/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-11A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-12A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-13A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-14A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-15A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-16A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11201716:00
Lab Number: L1735250
Report Date: 11/20/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-17A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-18A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-19A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-20A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-21A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-22A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11201716:00
Lab Number: L1735250
Report Date: 11/20/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-23A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-24A	Glass 250ml/8oz unpreserved	A	NA		-1.8	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-25A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-26A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-27A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-28A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Project Name: USACE/NHH FNP
Project Number: 60543021

Serial_No: 11201716:00
Lab Number: L1735250
Report Date: 11/20/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-29A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-30A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-31A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-32A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-33A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-34A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-35A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-36A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-37A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-38A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-39A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-40A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-41A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-42A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-43A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-44A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-45A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-46A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Project Number: 60543021

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-47A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-48A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-49A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-50A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-51A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-52A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1735250-53A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-54A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1735250-55A	Glass 250ml/8oz unpreserved	B	NA		0.2	Y	Absent		A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-LIPIDS(7),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HG-7474T(365),A2-HGPREP-AF(28),A2-PREP-3051(180),A2-CU-6020T(180),A2-RIM-PEST-8081(14)

Container Comments

L1735250-06A Containers for 5250-01 thru -05 received empty. Rec'd 10/5

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

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projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 111 NOAA Technical Memorandum NOS ORCA 130: Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project: 1993-196 Update. March 1998.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

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Facility: **Company-wide**

Revision 10

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:**Westborough Facility****EPA 624:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 300:** DW: Bromide**EPA 6860:** NPW and SCM: Perchlorate**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation**EPA 9012B:** NPW: Total Cyanide**EPA 9050A:** NPW: Specific Conductance**SM3500:** NPW: Ferrous Iron**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.**SM5310C:** DW: Dissolved Organic Carbon**Mansfield Facility****SM 2540D:** TSS**EPA 3005A** NPW**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation**Westborough Facility:****Drinking Water****EPA 300.0:** Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.****EPA 624:** Volatile Halocarbons & Aromatics,**EPA 608:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.****Mansfield Facility:****Drinking Water****EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	No – PCB samples -21 to -55 due to matrix interference
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	No – BZ18 in blank associated to -21 to -40
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	Yes
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – see Narrative



Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	



Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	No	CCV: opening for MB2, LCS/LCSD2, SRM2: Benz(a)anthracene @ 18% CCV: opening for L1735250-36 through -40: Benzo(k)fluoranthene @ 16%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735250-21MS: Naphthalene @ 34%, Acenaphthylene @ 36%, Acenaphthene @ 33%, Fluorene @ 35%, Phenanthrene @ 48%, Anthracene @ 38%, Fluoranthene @ 45%, Pyrene @ 44%, Chrysene @ 40%, Benzo(b)fluoranthene @ 47%, Benzo(k)fluoranthene @ 49%, Benzo(a)pyrene 39%, Indeno(1,2,3-cd)Pyrene @ 49%, Dibenz(a,h)anthracene @ 45%, Benzo(g,h,i)perylene @ 46% L1735250-21MSD: Naphthalene @ 41%, Acenaphthylene @ 41%, Acenaphthene @ 39%, Fluorene @ 41%, Anthracene @	In Data Package



*QC Summary Tables
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			45%, Pyrene @ 50%, Chrysene @ 45%, Benzo(k)fluoranthene @ 43%, Benzo(a)pyrene 44% L1735250-41MS: Naphthalene @ 50%, Acenaphthene @ 50%, Anthracene @ 49%, Chrysene @ 50%, Benzo(k)fluoranthene @ 49%	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV Opening for MB1, LCS/LCSD1, L1735250-01D/MS/MSD SRM1: channel A gamma-BHC @ 17% CCV opening for L1735250-02 through 20:channel A: gamma-BHC @ 18%, Aldrin @ 16% CCV opening for: MB2 Channel A: cis-nonachlor @ 16%, methoxychlor @ 18%, channel B: Methoxychlor @ 24% CCV opening for L1735250-42-50: Channel B : Methoxychlor @ 17%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM3: cis-chlordane @ 32%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735250-21MS: Hexachlorobenzene @ 42%, gamma-BHC @ 46%, Heptachlor @ 44%, Aldrin @ 46%, Heptachlor epoxide @ 36%, Oxychlordane @ 36%, trans-Chlordane @ 44%, Endosulfan I @ 42%,	In Data Package



*QC Summary Tables
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			<p>cis-Chlordane @ 39%, trans-Nonachlor @ 40%, 4,4'-DDE @ 43%, Dieldrin @ 43%, Endrin @ 39%, Endosulfan II @ 39%, 4,4'-DDD @ 44%, cis-Nonachlor @ 44%, 4,4'-DDT @ 36%, Methoxychlor @ 35%</p> <p>L1735250-21MSD: Heptachlor epoxide @ 44%, Oxychlordane @ 44, Endosulfan I @ 50%, cis-Chlordane @ 46%, trans-Nonachlor @ 47%, Endrin @ 48%, Endosulfan II @ 48%, 4,4'-DDT @ 43%, Methoxychlor @ 43%</p> <p>L1735250-41MS: Heptachlor epoxide @ 48%, Oxychlordane @ 46%, cis-Chlordane @ 48%, trans-Nonachlor @ 49%, Endosulfan II @ 48%</p> <p>L1735250-41MSD: Heptachlor epoxide @ 44%, Oxychlordane @ 43%, Endosulfan I @ 50%, cis-Chlordane @ 47%, trans-Nonachlor @ 47%, cis-Nonachlor @ 48%, 4,4'-DDT @ 48%,</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	<p>L1735250-38: DBOB channel A @ 177%</p> <p>L1735250-42: BZ198 channel A @ 191%</p> <p>L1735250-41MSD: BZ198 channel B @ 23%</p>	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV opening for MB2,LCS/LCSD2, SRM2: C15-BZ#101 @ 53%, C16-BZ#138 @ 24% CCV opening for L1735250-36 through -40: C15-BZ#101 @ 78%, C16-BZ#128 @ 19% CCV opening for MB3, LCS/LCSD3, SRM3: C15-BZ3110 @ 57%, C19-BZ#206 @ 17% CCV opening for L1735250-41 through 55: C12-BZ#8 @ 20%, C15-BZ#101 @ 93%, C15-BZ#110 @ 38%, C19-BZ#206 @ 19%, C110-BZ#209 @ 16%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes.	No	L1735250-01MS: C13-BZ#18 @ 167%, C14-BZ#49 @ 50% L1735250-01MSD: C13-BZ#18 @ 144%,	In Data Package

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*QC Summary Tables
US Army Corps of Engineers*

	(Recovery Limits 50 to 120%; RPD <30%)		<p>C14-BZ#49 @ 50%</p> <p>L1735250-21MS: C12-BZ#8 @ 38%, C13-BZ#28 @ 43%, C14-BZ#44 @ 40%, C14-BZ#49 @ 32%, C14-BZ#52 @ 45%, C14-BZ#66 @ 39%, C15-BZ#87 @ 40%, C15-BZ#101 @ 44%, C15-BZ#105 @ 36%, C15-BZ#118 @ 39%, C16-BZ#128 @ 43%, C16-BZ#138 @ 41%, C16-BZ#153 @ 46%, C17-BZ#170 @ 42%, C17-BZ#180 @ 40%, C17-BZ#180 @ 40%, C17-BZ#183 @ 34%, C17-BZ#184 @ 43%, C17-BZ#187 @ 46%, C18-BZ#195 @ 43%, C19-BZ#206 @ 43%, C110-BZ#209 @ 43%</p> <p>L1735250-21MSD: C12-BZ#8 @ 46%, C14-BZ#44 @ 49%, C14-BZ#49 @ 39%, C14-BZ#66 @ 50%, C15-BZ#105 @ 44%, C15-BZ#118 @ 49%, C17-BZ#183 @ 42%</p> <p>L1735250-21MS/MSD RPD: C17-BZ#184 @ 33%, C15-BZ#101 @ 31%</p> <p>L1735250-41MS: C12-BZ#8 @ 50%, C14-BZ#49 @ 46%, C17-BZ#183 @ 46%</p> <p>L1735250-41MSD: C14-BZ#49 @ 49%</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Performed Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735250-53 (WG1056189-5) As(142%), Cu(142%), Zn(142%)	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.



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ESI Job No:

Serial_No:11201716:00

L1735250

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
01 056	Nv Native Background Rep A	09/29/17	1600	ESI		1	9 oz	G	Frozen	Solid	N	*
02 057	Nv Native Background Rep B					1	9 oz	G	Frozen	Solid	N	*
03 058	Nv Native Background Rep C					1	9 oz	G	Frozen	Solid	N	*
04 059	Nv Native Background Rep D					1	9 oz	G	Frozen	Solid	N	*
05 060	Nv Native Background Rep E					1	9 oz	G	Frozen	Solid	N	*
06 061	Nv LaBoratory Control Rep A					1	9 oz	G	Frozen	Solid	N	*
07 062	Nv LaBoratory Control Rep B					1	9 oz	G	Frozen	Solid	N	*
08 063	Nv LaBoratory Control Rep C					1	9 oz	G	Frozen	Solid	N	*
09 064	Nv LaBoratory Control Rep D					1	9 oz	G	Frozen	Solid	N	*
10 065	Nv LaBoratory Control Rep E					1	9 oz	G	Frozen	Solid	N	*
11 066	Nv CLDS Reference Sediment Rep A					1	9 oz	G	Frozen	Solid	N	*
12 067	Nv CLDS Reference Sediment Rep B					1	9 oz	G	Frozen	Solid	N	*

Relinquished By:	Date: 10-2-17 Time: 1720	Received By:	Date: 10-2-17 Time: 1720
Relinquished By:	Date: 10/02/17 Time: 1245	Received at Lab By:	Date: 10-2-17 Time: 1245

Comments:

ERR

Rel 10/2/17 1900

Rec 10/2/17 1900

COC Number: A1015431

Sample Delivery Group No:	September 2017	Page	of
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ESI Job No:

Serial_No:11201716:00

21735250

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
5250 25	080 Nv Composite 2 Rep E	09/29/17	1600	ESI		1	9 oz	G	Frozen	Solid	N	*
26	081 Nv Composite 3 Rep A					1	9 oz	G	Frozen	Solid	N	*
27	082 Nv Composite 3 Rep B					1	9 oz	G	Frozen	Solid	N	*
28	083 Nv Composite 3 Rep C					1	9 oz	G	Frozen	Solid	N	*
29	084 Nv Composite 3 Rep D					1	9 oz	G	Frozen	Solid	N	*
30	085 Nv Composite 3 Rep E					1	9 oz	G	Frozen	Solid	N	*
31	086 Nv Composite 4 Rep A					1	9 oz	G	Frozen	Solid	N	*
32	087 Nv Composite 4 Rep B					1	9 oz	G	Frozen	Solid	N	*
33	088 Nv Composite 4 Rep C					1	9 oz	G	Frozen	Solid	N	*
34	089 Nv Composite 4 Rep D					1	9 oz	G	Frozen	Solid	N	*
35	090 Nv Composite 4 Rep E					1	9 oz	G	Frozen	Solid	N	*
36	091 Nv Composite 5 Rep A					1	9 oz	G	Frozen	Solid	N	*

Relinquished By:	Date: 10/02/17 Time: 1245	Received By:	Date: 10-2-17 Time: 12:45
Relinquished By:	Date: 10-2-17 Time: 17:20	Received at Lab By:	Date: Time:

Comments:

ERR

Rel 10/2/17 1900

Rec 10/2/17 1900

COC Number: A1015431

Sample Delivery Group No:	September 2017	Page	of
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1735250

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Report to: Liz Porta		Address: 320 Forbes Blvd		Project Number: P0718 Task: 0001	
Invoice to:		Address: Mansfield, MA 02048		Project Manager: Liz Porta	
Voice: 0		Fax: 0		email:	

Protocol: GENAE

ERR

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested Special Instructions:
13 068	Nv CLDS Reference Sediment Rep C	09/29/17	1000	ESI		1	9 oz	G	Frozen	Solid	N	*
14 069	Nv CLDS Reference Sediment Rep D					1	9 oz	G	Frozen	Solid	N	*
15 070	Nv CLDS Reference Sediment Rep E					1	9 oz	G	Frozen	Solid	N	*
16 071	Nv Composite 1 Rep A					1	9 oz	G	Frozen	Solid	N	*
17 072	Nv Composite 1 Rep B					1	9 oz	G	Frozen	Solid	N	*
18 073	Nv Composite 1 Rep C					1	9 oz	G	Frozen	Solid	N	*
19 074	Nv Composite 1 Rep D					1	9 oz	G	Frozen	Solid	N	*
20 075	Nv Composite 1 Rep E					1	9 oz	G	Frozen	Solid	N	*
21 076	Nv Composite 2 Rep A					1	9 oz	G	Frozen	Solid	N	*
22 077	Nv Composite 2 Rep B					1	9 oz	G	Frozen	Solid	N	*
23 078	Nv Composite 2 Rep C					1	9 oz	G	Frozen	Solid	N	*
24 079	Nv Composite 2 Rep D					1	9 oz	G	Frozen	Solid	N	*

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Relinquished By:	Date: 10/2/17 Time: 1720	Received at Lab By:	Date: 10/2/17 Time: 1720

Comments:

ERR Rel 10/2/17 1900 Rec 10/2/17 1900

COC Number: A1015431

Sample Delivery Group No:	September 2017	Page	of
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EnviroSystems, Inc.
1 Lafayette Road
Hampton, NH 03842

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No:

Serial_No:11201716:00

L1735250

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to:	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
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138	093 Nv Composite 5 Rep C					1	9 oz	G	Frozen	Solid	N	*
39	094 Nv Composite 5 Rep D					1	9 oz	G	Frozen	Solid	N	*
40	095 Nv Composite 5 Rep E					1	9 oz	G	Frozen	Solid	N	*
41	096 Nv Composite 6 Rep A					1	9 oz	G	Frozen	Solid	N	*
42	097 Nv Composite 6 Rep B					1	9 oz	G	Frozen	Solid	N	*
43	098 Nv Composite 6 Rep C					1	9 oz	G	Frozen	Solid	N	*
44	099 Nv Composite 6 Rep D					1	9 oz	G	Frozen	Solid	N	*
45	100 Nv Composite 6 Rep E					1	9 oz	G	Frozen	Solid	N	*
46	101 Nv Composite 7 Rep A					1	9 oz	G	Frozen	Solid	N	*
47	102 Nv Composite 7 Rep B					1	9 oz	G	Frozen	Solid	N	*
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Relinquished By: <i>[Signature]</i>	Date: 10-2-17 Time: 17:20	Received at Lab By: <i>[Signature]</i>	Date: 10/2/17 Time: 1720

Comments:

ERR Rel *[Signature]* 10/2/17 1400 Rec: *[Signature]* 10/2/17 1900

COC Number: A1015431

Sample Delivery Group No: September 2017 Page of



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4735250

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs		Contact: Liz Porta		Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta		Address: 320 Forbes Blvd		Project Number: P0718 Task: 0001	
Invoice to:		Address: Mansfield, MA 02048		Project Manager: Liz Porta	
Voice: 0		Fax: 0		email:	
Protocol: CENAE ERR					

Lab Number (assigned by Lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested Special Instructions:
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50	105 Nv Composite 7 Rep E					1	9 oz	G	Frozen	Solid	N	*
51	106 Nv Composite 8 Rep A					1	9 oz	G	Frozen	Solid	N	*
52	107 Nv Composite 8 Rep B					1	9 oz	G	Frozen	Solid	N	*
53	108 Nv Composite 8 Rep C					1	9 oz	G	Frozen	Solid	N	*
54	109 Nv Composite 8 Rep D					1	9 oz	G	Frozen	Solid	N	*
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Relinquished By:	Date: 10/02/17 Time: 1245	Received By:	Date: 10-2-17 Time: 1245
Relinquished By:	Date: 10-2-17 Time: 1720	Received at Lab By:	Date: 10/2/17 Time: 1720

Comments:

ERR Ret 10 2 17 1900

Rec 10/2/17 1900

COC Number: A1015431

Sample Delivery Group No: September 2017 Page of



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Serial_No:11201716:00

L1735250

CHAIN OF CUSTODY DOCUMENTATION

Client: Alpha Analytical Labs	Contact: Liz Porta	Project Name: New Haven Harbor Federal Navigation Project	
Report to: Liz Porta	Address: 320 Forbes Blvd	Project Number: P0718	Task: 0001
Invoice to: Liz Porta	Address: Mansfield, MA 02048	Project Manager: Liz Porta	
Voice: 0	Fax: 0	email:	ERR

Protocol: CENAE

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com- posite (G/C)	No	Container Size (mL)	Type (P/G/T)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
35250 101 056	Nv Native Background Rep A	10/04/17	1620	ESI		1	9 oz	G	Frozen	Solid	N	0
102 057	Nv Native Background Rep B					1	9 oz	G	Frozen	Solid	N	0
103 058	Nv Native Background Rep C					1	9 oz	G	Frozen	Solid	N	0
104 059	Nv Native Background Rep D					1	9 oz	G	Frozen	Solid	N	0
105 060	Nv Native Background Rep E					1	9 oz	G	Frozen	Solid	N	0

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Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

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COC Number: A1015464

Sample Delivery Group No:

Oct 2017

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of

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Page 396 of 396
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Appendix E Backup Biology Laboratory Data

**TOXICOLOGICAL EVALUATION
OF A PROPOSED DREDGE SEDIMENT:**

**New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut**

**New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021**

Suspended Particulate Phase Evaluation

Prepared For:

AECOM
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Chelmsford, Massachusetts 01824

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EnviroSystems, Inc. Master Reference 29516
Study Specific Reference 29523
August 2017 Revision 1

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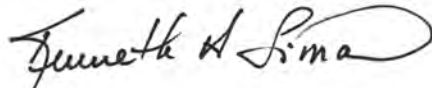
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LABORATORY STANDARDS STATEMENT

This study was performed by EnviroSystems, Incorporated at its facility in Hampton, New Hampshire. EnviroSystems' laboratory is accredited by the State of New Hampshire under the National Environmental Laboratory Accreditation (NELAC) program. Additionally, ESI is accredited under the Department of Defense (DoD) ELAP program, ISO/IEC 17025:2005, Certificate Number L2340. All testing conducted by EnviroSystems as part of this program was compliant with NELAC guidelines and standards. Additionally, this study was conducted in accordance with guidelines presented in the 2004 version of the New England District's Regional Implementation Manual (RIM) for Evaluation of Dredged Material Proposed for Disposal In New England Waters. Any deviations from specific elements of the RIM are detailed in the Protocol Deviation Section of this Report.

For EnviroSystems, Inc.


Kenneth A. Simon
Technical Director

September 8, 2017

Date

TOXICOLOGICAL EVALUATION OF A PROPOSED DREDGE SEDIMENT:

New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut

New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021

Suspended Particulate Phase Evaluation

1.0 INTRODUCTION

As part of a comprehensive plan to reduce adverse environmental impacts of ocean dumping, Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 specifies that all sediments to be discharged into ocean waters must be evaluated to define their potential impact on existing benthic communities. The United States Environmental Protection Agency (US EPA) has determined that the most effective means to make such an assessment is through the use of bioassay tests, which provide a relatively direct estimate of potential impact.

This project was designed to evaluate the potential toxicity of sediments from the area of dredging proposed for the New Haven Harbor Federal Navigation Project (FNP) located in New Haven, Connecticut. Testing involved conduct of Suspended Particulate Phase (SPP) assays using the mysid, *Americamysis bahia*, inland silverside minnow, *Menidia beryllina*, and larvae of the sea urchin, *Arbacia punctulata*. Testing followed procedures established by the US EPA and the US Army Corps of Engineers (US ACE) for testing of dredged material, including *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters* (US EPA, CENAE 2004), *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual* (US EPA, US ACE 1991) and *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual* (US EPA, US ACE 1998).

2.0 MATERIALS AND METHODS

2.1 Sample Collection, Preservation and Storage

Sediment cores for toxicological analysis were collected by AECOM, Chelmsford, Massachusetts using vibracoring equipment from locations identified in the dredge footprint specified in the project Sampling and Analysis Plan (AECOM, 2017). Project site water and sediment samples were received under chain of custody in 5 gallon polyethylene buckets for sediment and in carboys for water. Site sediment samples were composited based on the compositing scheme provided by AECOM's team. Reference site samples were also collected by AECOM from the Central Long Island Sound Disposal Site (CLDS). Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Prior to testing, samples were placed in a secure refrigerator and stored at a temperature of $4 \pm 2^{\circ}\text{C}$ until test initiation. Sample identification, collection and receipt information is summarized in Table 1. Sample compositing information is provided in Table 2.

Water for the internal laboratory control was obtained from the Hampton Estuary, Hampton, New Hampshire. Water from this source has been used for culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean. The estuary receives no direct industrial discharges.

2.2 Elutriate Sample Preparation

The elutriate sample was prepared by placing one volume of test sediment and four volumes of

overlying site water in a stainless steel container and mixing with a mechanical stirring device for 30 minutes. Speed of the stirring motor was set so that the sample did not cavitate, entrain air, and oxidize the sample. After mixing, the sediment and water mixture was allowed to settle for an hour. The resulting supernatant solution was then removed by siphon and centrifuged before being submitted for biological and chemical evaluation. A summary of the elutriate preparation is provided in Table 3.

Test concentrations were mixed by diluting the elutriate sample with the overlying water collected from the CLDS reference site. Test concentrations for all assays were 1%, 10%, 50% and 100% (undiluted elutriate). The diluent control was included to verify the relative toxicity of the reference site, and the Hampton Estuary control was included to verify the relative health of the test organisms.

2.3 Test Species

A. bahia were ≤ 5 days old and were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. *M. beryllina* were 9-14 days old at the start of the assay and were obtained from Aquatic BioSystems, Inc., (ABS), Fort Collins, Colorado for the Round 1 assay, and from ARO for the Round 2 assay. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. Organisms were transferred to test vessels using a large bore pipet to minimize the amount of water added to test solutions.

Adult *A. punctulata* were from cultures maintained by ESI. Original stock was obtained from a commercial supplier. Adult sea urchins are maintained in the laboratory for as long as they are viable. Male and female urchins are maintained in separate chambers at a temperature of approximately $12 \pm 3^\circ\text{C}$ after spawning.

2.4 Suspended Particulate Phase Assays

The toxicity tests were completed on a total of 8 elutriate samples that were split into two groups of 4 and analyzed in two separate rounds of assays with staggered start dates, each with their own respective laboratory control samples and reference samples. These tests are hereafter referred to as Rounds 1 and 2, and their periods of assay conduct are summarized in Table 4.

2.4.1 SPP Evaluations - *A. bahia* and *M. beryllina*

The 96 hour static acute toxicity tests were conducted at $20 \pm 2^\circ\text{C}$ with a photoperiod of 16:8 hours light:dark. Test chambers were 250 mL beakers containing 200 mL of test solution in each of 5 replicates with 10 organisms/replicate. Survival in all test replicates was recorded after 1, 24, 48, 72, and 96 hours of exposure. Dissolved oxygen, pH, temperature and salinity were measured daily in one replicate of each treatment. *A. bahia* and *M. beryllina* were fed twice daily throughout testing.

2.4.2 Embryo Survival and Development SPP Evaluation - *A. punctulata*

The *A. punctulata* embryo survival and development assays were conducted at $20 \pm 1^\circ\text{C}$ with a photoperiod of 16:8 hours light:dark. Test chambers for the acute assays were 250 mL glass beakers containing 200 mL test solution in each of 5 replicates. Dissolved oxygen, pH, temperature and salinity were measured in one replicate of each treatment at the start and end of the test. Gametes were obtained by potassium chloride injection to induce spawning. Gametes were collected and diluted with filtered laboratory seawater to yield approximate stock concentrations. Measured aliquots of gamete stock solutions were combined, fertilization success was monitored 15 minutes later, and the density of embryos was calculated. Sufficient embryos were removed from the stock solution and added to each test vessel to achieve a final concentration of approximately 25 to 35 embryos/mL of solution. Prior to transferring embryos from the holding vessel to the individual test vessels, the embryo stock solution was thoroughly homogenized to ensure even distribution. Embryo counts in three surrogate vessels were conducted just after the addition of the embryos to determine the actual embryo concentrations in the final elutriate solutions.

Observations in surrogate vessels were also used to determine the test endpoint. The test is terminated when approximately 90% of the fertilized embryos in the control vessels have reached the pluteus larval stage (between 48 and 96 hours). The tests were then terminated and 5 mL aliquots of each test replicate were preserved with 10% buffered formalin solution. All larvae in the 5 mL aliquot were counted to determine survival and normal development.

2.5 Data Analysis

As appropriate, statistical analysis of acute and chronic exposure data was completed using CETIS™ (Comprehensive Environmental Toxicity Information System) version 1.9.3.0 software. The program computes acute exposure endpoints based on US EPA decision tree guidelines specified in individual test methods. Statistical significance was accepted at $\alpha = 0.05$.

2.6 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Summaries of reference toxicant assays conducted in support of this study are provided in Table 5.

3.0 RESULTS AND DISCUSSION

A summary of endpoints for each species is provided in Table 6. Water quality characteristics are summarized in Table 7. Laboratory bench sheets, water quality data, and associated statistical support data are included in Appendix A.

3.1 SPP Evaluations - *A. bahia* Round 1

At the end of the 96 hour exposure period, *A. bahia* survival was 100% in the Hampton Estuary laboratory control and 98% in the CLDS reference water treatment. This meets the minimum test acceptability criteria of $\geq 90\%$ survival in the laboratory control and is an indication that the test organisms were healthy and not stressed by handling. These data are considered valid for evaluating impacts associated with elutriate samples.

Review of data collected at the end of the assay documented that the mysid LC-50s in site composite elutriate solutions 1, 2, 3, and 4 were all $>100\%$.

3.2 SPP Evaluations - *A. bahia* Round 2

At the end of the 96 hour exposure period, *A. bahia* survival was 100% in the Hampton Estuary laboratory control and 100% in the CLDS reference water treatment. This meets the minimum test acceptability criteria of $\geq 90\%$ survival in the laboratory control and is an indication that the test organisms were healthy and not stressed by handling. These data are considered valid for evaluating impacts associated with elutriate samples.

Review of data collected at the end of the assay documented that the mysid LC-50 in site composite elutriate solution 5 was $>100\%$. Site composite elutriate solutions 6, 7 and 8 caused significant adverse effects on mysid survival with LC-50s of 68%, 65% and 84%, respectively.

3.3 SPP Evaluations - *M. beryllina* Round 1

At the end of the 96 hour exposure period, *M. beryllina* survival was 100% in the Hampton Estuary laboratory control and 96% in the CLDS reference water treatment. This meets the minimum test acceptability criteria of $\geq 90\%$ survival in the laboratory control and is an indication that the test organisms were healthy and not stressed by handling. These data are considered valid for evaluating impacts

associated with elutriate samples.

Review of data collected at the end of the assay documented that the minnow LC-50s in site composite elutriate solutions 1, 2, 3, and 4 were all >100%.

3.4 SPP Evaluations - *M. beryllina* Round 2

At the end of the 96 hour exposure period, *M. beryllina* survival was 96% in the Hampton Estuary laboratory control and 100% in the CLDS reference water treatment. This meets the minimum test acceptability criteria of $\geq 90\%$ survival in the laboratory control and is an indication that the test organisms were healthy and not stressed by handling. These data are considered valid for evaluating impacts associated with elutriate samples.

Review of data collected at the end of the assay documented that site composite elutriate solutions 5, 6, 7 and 8 all caused significant adverse effects on minnow survival with LC-50s of 78%, 46%, 48% and 72%, respectively.

3.5 SPP Evaluations - *A. punctulata* Round 1

Counts made in the Hampton Estuary laboratory surrogate test vessels at the initiation of the *A. punctulata* assay indicated an average initial embryo concentration of 155 embryos/5mL, equal to approximately 31 embryos/mL. The assay was terminated after 67 hours exposure when it was determined that the majority of the larvae (>90%) had reached the pluteus larval stage. Embryo counts in the Hampton Estuary laboratory control treatment showed 83% of the embryos survived at the end of the assay. Of the original embryos, 83% were normally developed pluteus larvae. Embryo counts in the CLDS reference site water showed 88% of the embryos survived and 86% were normally developed at the end of the assay. This meets the minimum test acceptability criteria of $\geq 70\%$ embryo survival and $\geq 70\%$ normal development in the laboratory control sample.

Review of the data collected at the end of the assay indicate that all the site composite elutriate solutions except composite 1 elutriate had significant negative impacts on embryonic survival and/or development, with LC-50s ranging from 18-21% for survival and with EC-50s ranging from 4-17% for development.

3.6 SPP Evaluations - *A. punctulata* Round 2

Counts made in the Hampton Estuary laboratory surrogate test vessels at the initiation of the *A. punctulata* assay indicated an average initial embryo concentration of 159 embryos/5mL, equal to approximately 32 embryos/mL. The assay was terminated after 48 hours exposure when it was determined that the majority of the larvae (>90%) had reached the pluteus larval stage. Embryo counts in the Hampton Estuary laboratory control treatment showed 76% of the embryos survived at the end of the assay. Of the original embryos, 72% were normally developed pluteus larvae. Embryo counts in the CLDS reference site water showed 74% of the embryos survived and 71% were normally developed at the end of the assay. This meets the minimum test acceptability criteria of $\geq 70\%$ embryo survival and $\geq 70\%$ normal development in the laboratory control sample.

Review of the data collected at the end of the assay indicate that all the site composite elutriate solutions had significant negative impacts on embryonic survival and/or development, with LC-50s ranging from 9-35% for survival and with EC-50s ranging from 1-4% for development.

3.7 Protocol Deviations

Review of the data collected for these assays documented a few minor deviations from the method protocol and/or ESI's standard procedures. The protocol requires that the assays be conducted at $20 \pm 2^\circ\text{C}$ for the *A. bahia* and *M. beryllina* assays, and $20 \pm 1^\circ\text{C}$ for the *A. punctulata* assay. Although the assays

were, for the most part, maintained in incubators set at their target temperatures, some temperatures recorded during the assays fell outside of the protocol range due to the ambient laboratory temperature at the time that dilutions were mixed and water quality measurements were taken. These species can tolerate temperatures within the ranges measured, and US EPA protocol allows temperatures of $25 \pm 2^\circ\text{C}$ for these species. It was noted that the incubator for the Round 1 mysid assays was initially set too high but was corrected and possibly over-compensated the next day. It is the opinion of ESI's technical director that these deviations had no adverse impact on the outcome of the assay.

In addition, the protocol requires that the assays be conducted at $30 \pm 2\%$. It is not uncommon for the salinity to drift upwards during assay conduct due to evaporation and exceed the protocol requirement, but the salinities are adjusted daily as needed to account for this occurrence. In a few instances of the Round 1 mysid assay, the measured salinity was slightly below the acceptable range. It is the opinion of ESI's technical director that these deviations had no adverse impact on the outcome of the assay.

Last, due to technician oversight ammonia samples were not collected for analysis at assay initiation for the laboratory control or CLDS reference samples. Likewise, during Round 2 of the minnow and mysid assays the final ammonia samples were not collected for analysis. Rather, ammonia samples were taken from the 50% test concentration when the assays were terminated at 96 hours. Similarly, ammonia samples were not collected at the end of the Round 2 urchin assays. While these occurrences represent a data gap and a deviation from ESI's internal protocol, it is the opinion of ESI's technical director that these deviations had no adverse impact on the outcome of the assay.

3.8 Summary

This program utilized protocols developed by the USEPA and the CENAE to assess the potential impact of the proposed dredge material collected from New Haven Harbor would have on the marine environment. Review of the data documents that there were no significant effects on any of the tested organisms following exposure to the undiluted elutriate solution from composite 1. In addition, there were no adverse effects on mysid or minnow survival after exposure to the undiluted elutriate solutions from composites 2 through 4. However, significant adverse effects on mysid and/or minnow survival occurred following exposure to composite 5 through 8 elutriate solutions, and composite 2 through 8 elutriate solutions had significant negative effects on urchin larval survival and/or development.

A notable amount of total ammonia (>10 mg/L) was observed in composites 2, 3, 4, 5, 6, 7, and 8 elutriate solution at the start of the assays. US EPA guidance suggests ammonia, generally in the unionized form, can be a source of toxicity when total ammonia values are >5 mg/l (USEPA 2002). US EPA Ambient Water Quality Criteria (AWQC) for unionized ammonia in saltwater references LC-50 values for two of the species tested: *A. bahia* (1.04 mg/L) and *M. beryllina* (0.88 mg/L) (USEPA 1989). AWQC for unionized ammonia in saltwater are not available for *A. punctulata*, however effects levels are available in the literature for urchin species ranging from 0.06 mg/L for an EC-50 for development (Maguire Group Inc., 2003) to approximately 0.336 mg/L for a 96-hour LC-50 (Chang-Hoon Lee et al., 2013). Calculated unionized ammonia values from the start of the assays for these composites and species ranged between 0.5 to 2.1 mg/L (*A. bahia*), 0.4 to 2.1 mg/L (*M. beryllina*) and 0.4 to 1.9 mg/L (*A. punctulata*). Consequently, it is possible that any observed toxicity in these composites is a product of total and unionized ammonia content.

4.0 REFERENCES

- AECOM. 2017. *Draft Laboratory Testing in Support of Environmental Assessment; Sampling & Environmental Testing – New Haven Harbor FNP [Sampling and Analysis Plan]*. Chelmsford, Massachusetts. August 2017.
- Chang-Hoon Lee, Chan-Gyoung Sung, Seong-Dae Moon and Jong-Hyeon Lee. 2013. *Effects of Ammonia on Fertilization, Development, and Larval Survival in the Northern Pacific Asteroid, Asterias amurensis (See Urchin)*. Bulletin of Environmental Contamination and Toxicology (2013) 91:102-106.

- Maguire Group, Inc. 2003. *Laboratory Testing in Support of Site Specific Water Quality Criteria Assessment and Hydrographic Data Collection for New Bedford Harbor*. Toxicity Identification Evaluation Testing with Mysids and Sea Urchins.
- US EPA Region 1, CENAE. 2004. *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters*. September 2004.
- US EPA. 1989. *Ambient Water Quality Criteria for Ammonia (Saltwater)* – 1989. EPA 440/5-88-004. April 1989.
- US EPA, US ACE. 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual*. EPA-503/8-91/001, February 1991.
- US EPA, US ACE. 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual*. EPA-823-B-98-004, February 1998.
- US EPA 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fifth Edition. EPA-821-R-02-012.

Table 1. Sample Collection and Receipt Information. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-Z	29516-001	Site	Solid	08/12/17	1350	08/18/17	1300
NHH-Z	29516-002	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-P	29516-003	Site	Solid	08/12/17	0850	08/18/17	1300
NHH-P	29516-004	Site	Solid	08/09/17	1219	08/18/17	1300
NHH-L	29516-005	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-L	29516-006	Site	Solid	08/10/17	1300	08/18/17	1300
NHH-J	29516-007	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-J	29516-008	Site	Solid	08/10/17	1141	08/18/17	1300
NHH-F	29516-009	Site	Solid	08/16/17	1658	08/18/17	1300
NHH-F	29516-010	Site	Solid	08/11/17	1650	08/18/17	1300
NHH-M	29516-011	Site	Solid	08/13/17	1220	08/18/17	1300
NHH-M	29516-012	Site	Solid	08/08/17	1610	08/18/17	1300
NHH-B	29516-013	Hold ^a	Solid	08/11/17	1157	08/18/17	1300
NHH-W	29516-014	Site	Solid	08/09/17	1634	08/18/17	1300
NHH-W	29516-015	Site	Solid	08/15/17	0938	08/18/17	1300
NHH-O	29516-016	Site	Solid	08/14/17	1614	08/18/17	1300
NHH-O	29516-017	Site	Solid	08/08/17	1445	08/18/17	1300
NHH-Y	29516-018	Site	Solid	08/13/17	0820	08/18/17	1300
NHH-Y	29516-019	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-G	29516-020	Site	Solid	08/17/17	0934	08/18/17	1300
NHH-G	29516-021	Site	Solid	08/11/17	0837	08/18/17	1300
NHH-K	29516-022	Site	Solid	08/10/17	1409	08/18/17	1300
NHH-K	29516-023	Site	Solid	08/14/17	1232	08/18/17	1300
NHH-N	29516-024	Site	Solid	08/13/17	1515	08/18/17	1300
NHH-N	29516-025	Site	Solid	08/08/17	1305	08/18/17	1300
NHH-A	29516-026	Hold ^a	Solid	08/11/17	1340	08/18/17	1300
NHH-C	29516-027	Site	Solid	08/17/17	1213	08/18/17	1300
NHH-C	29516-028	Site	Solid	08/11/17	1033	08/18/17	1300
NHH-D	29516-029	Site	Solid	08/16/17	1443	08/18/17	1300
NHH-D	29516-030	Site	Solid	08/11/17	1507	08/18/17	1300
NHH-T	29516-031	Site	Solid	08/12/17	1220	08/18/17	1300
NHH-T	29516-032	Site	Solid	08/08/17	1734	08/18/17	1300
NHH-E	29516-033	Site	Solid	08/14/17	0832	08/18/17	1300
NHH-E	29516-034	Site	Solid	08/16/17	1230	08/18/17	1300
NHH-S	29516-035	Site	Solid	08/15/17	1158	08/18/17	1300
NHH-S	29516-036	Site	Solid	08/10/17	0955	08/18/17	1300
NHH-R	29516-037	Site	Solid	08/16/17	0829	08/18/17	1300
NHH-R	29516-038	Site	Solid	08/10/17	0832	08/18/17	1300
NHH-H	29516-039	Site	Solid	08/10/17	1548	08/18/17	1300
NHH-H	29516-040	Site	Solid	08/16/17	1027	08/18/17	1300

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-I	29516-041	Site	Solid	08/10/17	1746	08/18/17	1300
NHH-I	29516-042	Site	Solid	08/17/17	1627	08/18/17	1300
NHH-V	29516-043	Site	Solid	08/09/17	1745	08/18/17	1300
NHH-V	29516-044	Site	Solid	08/15/17	1646	08/18/17	1300
NHH-X	29516-045	Site	Solid	08/08/17	0922	08/18/17	1300
NHH-X	29516-046	Site	Solid	08/12/17	1600	08/18/17	1300
NHC-I	29516-048	Site	Water	08/17/17	1430	08/18/17	1300
NHC-V	29516-049	Site	Water	08/17/17	1528	08/18/17	1300
NHC-F	29516-050	Site	Water	08/17/17	1300	08/18/17	1300
CLDS-Ref-Top	29516-051	Reference	Water	08/17/17	1015	08/18/17	1300
CLDS-Ref-Mid	29516-052	Reference	Water	08/17/17	1015	08/18/17	1300
CLDS-Ref-Bottom	29516-053	Reference	Water	08/17/17	1015	08/18/17	1300
NHH-Q	29516-054	Site	Solid	08/09/17	1427	08/18/17	1300
NHH-U	29516-055	Site	Solid	08/09/17	0905	08/18/17	1300

Note:

^a Samples NHH-A and NHH-B were delivered to ESI but were not included in the compositing scheme per verbal communication from the client.

Table 2. Summary of Sample Compositing Information. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Composite ID	ESI Code	Components		Final Amount	Composite Date	
		Field ID	ESI Code		Date	Time
Composite Reference Water (CLDS ^a)	29517-010	CLDS-Ref-Top	29516-051	30 gal	08/21/17	1445
		CLDS-Ref-Mid	29516-052			
		CLDS-Ref-Bottom	29516-053			
Composite 1	29517-001	NHH-C	29516-027	22 gal	08/21/17	0840
		NHH-C	29516-028			
Composite 2	29517-002	NHH-D	29516-029	26 gal	08/21/17	0950
		NHH-D	29516-030			
		NHH-E	29516-033			
		NHH-E	29516-034			
		NHH-F	29516-009			
		NHH-F	29516-010			
Composite 3	29517-003	NHH-G	29516-020	31 gal	08/21/17	1400
		NHH-G	29516-021			
		NHH-H	29516-039			
		NHH-H	29516-040			
		NHH-I	29516-041			
		NHH-I	29516-042			

Composite ID	ESI Code	Components		Final Amount	Composite Date	
		Field ID	ESI Code		Date	Time
Composite 4	29517-004	NHH-J	29516-007	23 gal	08/21/17	1445
		NHH-J	29516-008			
		NHH-K	29516-022			
		NHH-K	29516-023			
		NHH-L	29516-005			
		NHH-L	29516-006			
Composite 5	29517-005	NHH-M	29516-011	29 gal	08/21/17	1530
		NHH-M	29516-012			
		NHH-N	29516-024			
		NHH-N	29516-025			
		NHH-O	29516-016			
		NHH-O	29516-017			
Composite 6	29517-006	NHH-P	29516-003	28 gal	08/21/17	1205
		NHH-P	29516-004			
		NHH-Q	29516-054			
		NHH-R	29516-037			
		NHH-R	29516-038			
		NHH-S	29516-035			
Composite 7	29517-007	NHH-S	29516-036	31 gal	08/21/17	1540
		NHH-T	29516-031			
		NHH-T	29516-032			
		NHH-U	29516-055			
		NHH-V	29516-043			
		NHH-V	29516-044			
Composite 8	29517-008	NHH-W	29516-014	26 gal	08/21/17	1130
		NHH-W	29516-015			
		NHH-X	29516-045			
		NHH-X	29516-046			
		NHH-Y	29516-018			
		NHH-Y	29516-019			
		NHH-Z	29516-001			
		NHH-Z	29516-002			

Note:

^a The Composite Reference Water is referred to CLDS Reference Water hereafter.

**Table 3. Elutriate Solution Preparation. Suspended Particulate Phase Evaluation.
New Haven Harbor FNP. New Haven, Connecticut. August 2017.**

Water		Sediment		Elutriate Preparation			
Field ID	ESI Code	Composite ID	ESI Code	Elutriate ID	ESI Code	Date	Time
NHC-F	29516-050	Composite 1	29517-001	Elutriate 1 ^a	29521-002	08/22/17	1425
NHC-F	29516-050	Composite 2	29517-002	Elutriate 2 ^a	29521-004	08/22/17	1055
NHC-I	29516-048	Composite 3	29517-003	Elutriate 3 ^a	29521-006	08/22/17	1310
NHC-I	29516-048	Composite 4	29517-004	Elutriate 4 ^a	29521-008	08/22/17	1212
NHC-V	29516-049	Composite 5	29517-005	Elutriate 5	29521-010	08/23/17	1020
NHC-V	29516-049	Composite 6	29517-006	Elutriate 6	29521-012	08/23/17	1100
NHC-V	29516-049	Composite 7	29517-007	Elutriate 7	29521-014	08/23/17	0920
NHC-V	29516-049	Composite 8	29517-008	Elutriate 8	29521-016	08/23/17	1223
NHC-F	29516-050	Composite 1	29517-001	Elutriate 1 ^a	29521-017	08/25/17	0930
NHC-F	29516-050	Composite 2	29517-002	Elutriate 2 ^a	29521-018	08/25/17	1035
NHC-I	29516-048	Composite 3	29517-003	Elutriate 3 ^a	29521-019	08/25/17	1035
NHC-I	29516-048	Composite 4	29517-004	Elutriate 4 ^a	29521-020	08/25/17	1113

Note:

^a Elutriates 1 through 4 prepared on August 22, 2017 were used for the mysid assay only. Elutriates 1 through 4 prepared on August 25, 2017 were used for the *M. beryllina* and *A. punctulata* assays.

**Table 4. Period of Assay Conduct. Suspended Particulate Phase Evaluation.
New Haven Harbor FNP. New Haven, Connecticut. August 2017.**

Elutriate		Assay Start			Assay End	
Comp/Elutriate ID	ESI Code	Test Species	Date	Time	Date	Time
Comp 1 Elutriate	29521-002	<i>A. bahia</i> Round 1	08/22/17	1540	08/26/17	1440
Comp 2 Elutriate	29521-004					
Comp 3 Elutriate	29521-006					
Comp 4 Elutriate	29521-008					
Comp 5 Elutriate	29521-010	<i>A. bahia</i> Round 2	08/23/17	1645	08/27/17	1540
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					
Comp 1 Elutriate	29521-017	<i>M. beryllina</i> Round 1 ^a	08/25/17	1620	08/29/17	1500
Comp 2 Elutriate	29521-018					
Comp 3 Elutriate	29521-019					
Comp 4 Elutriate	29521-020					
Comp 5 Elutriate	29521-010	<i>M. beryllina</i> Round 2	08/23/17	1545	08/27/17	1345
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					
Comp 1 Elutriate	29521-017	<i>A. punctulata</i> Round 1 ^a	08/25/17	1600	08/28/17	1125
Comp 2 Elutriate	29521-018					
Comp 3 Elutriate	29521-019					
Comp 4 Elutriate	29521-020					
Comp 5 Elutriate	29521-010	<i>A. punctulata</i> Round 2	08/23/17	1630	08/25/17	1630
Comp 6 Elutriate	29521-012					
Comp 7 Elutriate	29521-014					
Comp 8 Elutriate	29521-016					

Note:

^a Rounds 1 of the *M. beryllina* and *A. punctulata* assay were first initiated on August 22, 2017 but failed to meet test acceptability criteria for survival in the laboratory control. The assays were successfully repeated on the dates and times listed above. The results of the first assays are included in Appendix A.

Table 5. Reference Toxicant Data Summary. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Date	Organism Lot	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>A. bahia</i>						
08/31/17	03AbARO083017	96Hr LC-50	20.5	18.0	13.3 - 22.8	SDS (mg/L)
<i>M. beryllina</i>						
08/31/17	07MbABS082617	96Hr LC-50	7.2	6.2	3.6 - 8.8	SDS (mg/L)
<i>A. punctulata</i>						
08/30/17	99ApARO083017	EC-50-Dev	16.1	18.9	10.4 - 27.5	Copper (μ g/L)

Notes: Means and Acceptable Ranges based on the most recent 20 reference toxicant assays.

Table 6. Summary of Endpoints and Adverse Effects. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Comp/Elutriate ID	ESI Code	<i>A. bahia</i>	<i>M. beryllina</i>	<i>A. punctulata</i>	
		LC-50 (Survival)	LC-50 (Survival)	LC-50 (Survival)	EC-50 (Development)
Comp 1 Elutriate	29521-002	>100%	>100%	>100%	>100%
Comp 2 Elutriate	29521-004	>100%	>100%	21%	4%
Comp 3 Elutriate	29521-006	>100%	>100%	18%	17%
Comp 4 Elutriate	29521-008	>100%	>100%	18%	15%
Comp 5 Elutriate	29521-010	>100%	78%	23%	3%
Comp 6 Elutriate	29521-012	68%	46%	9%	4%
Comp 7 Elutriate	29521-014	65%	48%	35%	1%
Comp 8 Elutriate	29521-016	84%	72%	35%	3%

Table 7. Summary of Water Quality Data - Round 1. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Comp/Elutriate ID	pH (SU)		Salinity (‰)		Ammonia (mg/L)		Ammonia (mg/L)	
	Start	End	Start	End	Start	End	Start	End
					Total	Unionized	Total	Unionized
<i>A. bahia</i>								
Laboratory Control Water	7.94	7.81	30	31	a	a	a	a
CLDS Reference Water	7.85	7.86	28	30	a	a	4.3	0.1199
Comp 1 Elutriate	8.03	7.92	30	32	2.2	0.1101	4.5	0.1434
Comp 2 Elutriate	7.98	8.18	30	32	24	1.2329	7.9	0.4465
Comp 3 Elutriate	7.91	8.09	30	32	12	0.5287	7.4	0.3203
Comp 4 Elutriate	7.96	8.13	30	32	17	0.7813	7.6	0.3592
<i>M. beryllina</i>								
Laboratory Control Water	8.07	7.86	30	32	a	a	3.8	0.1137
CLDS Reference Water	7.87	7.87	28	31	a	a	3.9	0.1193
Comp 1 Elutriate	8.07	7.94	30	32	1.8	0.0857	4	0.1430
Comp 2 Elutriate	8.03	8.15	30	32	20	0.8725	8.7	0.4935
Comp 3 Elutriate	7.96	8.05	30	32	12	0.4485	7.5	0.3419
Comp 4 Elutriate	7.99	8.15	30	31	15	0.5991	6.9	0.3914
<i>A. punctulata</i>								
Laboratory Control Water	8.07	8.01	30	30	a	a	0.22	0.0098
CLDS Reference Water	7.87	8.00	28	28	a	a	0.18	0.0079
Comp 1 Elutriate	8.07	8.12	30	30	1.8	0.0857	1.8	0.1024
Comp 2 Elutriate	8.03	8.28	30	31	20	0.8725	15	1.1255
Comp 3 Elutriate	7.96	8.23	30	31	12	0.4485	10	0.7212
Comp 4 Elutriate	7.99	8.31	30	30	15	0.5991	13	1.1110

Note:

^a Due to an oversight, ammonia samples were not collected at the start of any assays for the laboratory control and CLDS reference site, or at the end of the *A. bahia* assay for the laboratory control only.

Table 8. Summary of Water Quality Data - Round 2. Suspended Particulate Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Comp/Elutriate ID	pH (SU)		Salinity (‰)		Ammonia (mg/L)		Ammonia (mg/L)	
	Start	End	Start	End	Start	End	Start	End
					Total	Unionized	Total	Unionized
<i>A. bahia</i>								
Laboratory Control Water	8.11	7.93	30	30	b	b	4.4	0.14
CLDS Reference Water	7.87	7.96	28	30	b	b	4.5	0.16
Comp 5 Elutriate	7.89	8.19	30	31	34	1.1	11	0.64
Comp 6 Elutriate ^a	7.88	8.09 ^a	30	31	57	1.8	36	1.7
Comp 7 Elutriate ^a	7.92	8.14 ^a	30	30	62	2.1	19	0.98
Comp 8 Elutriate	7.94	8.15	30	31	40	1.4	19	1.01
<i>M. beryllina</i>								
Laboratory Control Water	8.11	7.90	30	31	b	b	4.2	0.13
CLDS Reference Water	7.87	7.86	28	30	b	b	4.4	0.12
Comp 5 Elutriate	7.89	8.24	30	31	34	1.1	12	0.77
Comp 6 Elutriate ^a	7.88	8.02 ^a	28	30	57	1.8	12	0.48
Comp 7 Elutriate ^a	7.92	7.98 ^a	30	30	62	2.1	15	0.51
Comp 8 Elutriate	7.94	8.18	30	32	40	1.4	12	0.68
<i>A. punctulata</i>								
Laboratory Control Water	8.12	7.82	30	30	b	b	b	b
CLDS Reference Water	7.87	7.81	28	29	b	b	b	b
Comp 5 Elutriate	7.89	8.13	30	31	34	1.1	b	b
Comp 6 Elutriate	7.88	8.13	30	30	57	1.8	b	b
Comp 7 Elutriate	7.88	8.14	30	30	62	1.9	b	b
Comp 8 Elutriate	7.91	8.16	30	30	40	1.3	b	b

Note:

^a There was complete mortality before 96 hours, therefore water quality measurements were not taken. The last measured pH and temperature values were used for un-ionized ammonia calculations instead. Due to the complete mortality that occurred prior to 96 hours, ammonia samples were collected from the 50% test concentration.

^b Due to an oversight, ammonia samples were not collected at the start of any assays for the laboratory control and CLDS reference site, or at the end of the *A. punctulata* assay.

APPENDIX A:

RAW DATA & STATISTICAL SUPPORT

Contents	Number of Pages
Study Number Record	1
Sample Receipt Logs, Chain of Custody Records	12
Composite Preparation Documentation	9
Elutriate Preparation Records	12
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<i>A. bahia</i> SPP Evaluations	
Round 1 Bench Sheets - Dilutions, Survival and Water Quality, Organism History	7
Round 1 Statistical Analysis	12
Round 2 Bench Sheets - Dilutions, Survival and Water Quality, Organism History	7
Round 2 Statistical Analysis	16
<i>M. beryllina</i> SPP Evaluations	
Round 1 Bench Sheets - Dilutions, Survival and Water Quality, Organism History, Wet Weights	8
Round 1 Statistical Analysis	16
Round 2 Bench Sheets - Survival and Water Quality, Organism History, Wet Weights	7
Round 2 Statistical Analysis	18
<i>A. punctulata</i> SPP Evaluations	
Round 1 Bench Sheets - Embryo Worksheet, Counts and Water Quality	4
Round 1 Statistical Analysis	31
Round 2 Bench Sheets - Dilutions, Embryo Worksheet, Counts and Water Quality	5
Round 2 Statistical Analysis	32
<hr/>	
Total and Unionized Ammonia Data Calculations	2
Corps of Engineers QC Tables	2
Assay Review Checklist	1
<hr/>	
Total Appendix Pages	202

STUDY NUMBER RECORD

Issue and complete this form for studies that will require multiple tasks and directly associated support studies. Issue consecutive study numbers at the start of the project to cover all potential elements of the project.

CLIENT: AECOM

CONTACT(S): Ryan McCarthy, Christine Archer, Maura Surprenant


PROJECT: New Haven Harbor Federal Navigation Project

CONTRACT #: W912WJ-17-D-0003

Species / Analysis Parameters:		STUDY:
Sample Receipt:		29516
Grain Size Analysis:		-
Composite Prep:		29517
Bulk Sediment Analysis:		29518
10 Day Assay:	<i>Leptocheirus plumulosus</i>	29519
	<i>Americamysis bahia</i>	29520
Elutriate Preparation:	Type:	29521
Elutriate Analysis:	Pentachlorophenol	Yes / No
	Trace Metals	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No
SPP Assays:	<i>Menidia beryllina</i>	
	<i>Americamysis bahia</i>	29523
	<i>Arbacia punctulata</i>	
Bioaccumulation Study:	<i>Macoma nasuta</i>	29524
	<i>Nereis virens</i>	29525
Tissue Analysis:	Trace Metals	Yes / No
	PAH Compounds	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 1

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: NA
Received By: JTP Logged into Lab by: KC 
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 3
COC Serial Number(s): See CoCs
COC Complete: Yes Does the info on the COC match the samples? No
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? No
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: No Were samples received intact? (none broken or leaking) No
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
See Chains of Custody						

Notes and qualifications:

-Majority of samples not listed on chains of custody based on container sampling information. Samples rejected and on hold until further notice.
* Residual samples from grain size analyses received to include in final composites
-Field ID NHH-Q and NHH-U presented on the associated chains of custody for this sample receipt document (ESI samples -054 and -055) were accurately denoted based on sample containers, and were not present on revised chains of custody issued by AECOM on 08/21/17.

Client/Project Name:
USACE - NHH - FNP

Project Number:

Project Location:
New Haven Harbor

Field Logbook No.:

Analysis Requested

Container Type
P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation
1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Sampler (Print Name)/(Affiliation):
C. Steve Howe AECOM

Chain of Custody Tape Nos.:

Signature:
C. Steve Howe

Send Results/Report to:

TAT:

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHC-I	8/17/17	1430	X		5 gal	W	4°C	NA	X											7 carboys
NHC-V	8/17/17	1528	X			W			X											12 carboys, 2 DIs
NHC-F	8/17/17	1300	X			W			X											6 carboys
CLOS- Ref - Top	8/17/17	1015	X			W			X											2 carboys
CLOS- Ref - Mid			X			W			X											2 carboys
CLOS- Ref - Bottom			X			W			X											2 carboys
NHH-C	8/11	1033	X		5 gal bucket	SD			X											7 buckets
NHH-D	8/11	1507	X			SD			X									CSH	3	2 buckets
NHH-E	8/11	0832	X			SD			X											4 buckets
NHH-F	8/11	1650	X			SD			X											3 buckets
NHH-G	8/11	0837	X			SD			X											2 buckets
NHH-H	8/10	1548	X			SD			X											4 buckets
NHH-I	8/17	1627	X			SD			X											3 buckets

Relinquished by: (Print Name)/(Affiliation)
C. Steve Howe AECOM

Signature: **C. Steve Howe**

Date: **8/16/17**
Time: **1300**

Received by: (Print Name)/(Affiliation)
James T. Provencher ESI

Signature: **James T. Provencher**

Date: **08/18/17**
Time: **1300**

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Received by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Received by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Analytical Laboratory (Destination): **ESI** Notes:
Discrepancies between most sample date & time and what is labeled on sample containers. Total container count not accurate. Conditions unacceptable for sample receipt & processing. - Kc 8/18/17 1700

Sample Shipped Via: **AECOM** Temp blank

UPS FedEx Courier **Other** Yes **No**



CHAIN OF CUSTODY RECORD

29516

Page 2 of 3

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number:		Field Logbook No.:		Dredge Sediment Bial										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product		
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:																
Signature: 		Send Results/Report to:												TAT:				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered									Lab I.D.	Remarks
14 NHH-J	8/15/17	1405	X	X	5g bucket	SD	4°C	NA	X									3 buckets
15 NHH-K	8/16/17	1409	X	X					X									2 buckets
19 NHH-L	8/15/17	1515	X	X					X									2 buckets
16 NHH-M	8/8/17	1610	X	X					X									3 buckets
17 NHH-N	8/13/17	1515	X	X					X									2 buckets
18 NHH-O	8/18/17	1445	X	X					X									3 buckets
20 NHH-P	8/9/17	1219	X	X					X									3 buckets
21 NHH-Q (E10 8/21 -054)	8/9/17	1427	X	X					X									4 buckets
22 NHH-R	8/10/17	0832	X	X					X									3 buckets
23 NHH-S	8/10/17	0905	X	X					X									2 buckets
24 NHH-T 1734 CSH	8/8/17	1707 CSH	X	X					X									4 buckets
25 NHH-U (E10 8/21 -055)	8/9/17	0905	X	X					X									5 buckets
26 NHH-V	8/15/17	1646	X	X					X									3 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher		Date: 08/18/17		Analytical Laboratory (Destination): E10 8/21 Notes: See page 1 of 3 (E10 8/21) Samples NHH-Q & NHH-U are accurate based on sample container and were not denoted on revised CoC.										
Signature:		Time: 1300		Signature:		Time: 1300		Sample Shipped Via: AECOM Temp blank										
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:												
Signature:		Time:		Signature:		Time:		UPS FedEx Courier (Other) Yes (No)										
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:												
Signature:		Time:		Signature:		Time:												



CHAIN OF CUSTODY RECORD


29516

Page 3 of 3

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:			Field Logbook No.:			<div style="writing-mode: vertical-rl; transform: rotate(180deg);">Dredge Sed Eval</div>										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:													Lab I.D.		Remarks	
Signature: 			Send Results/Report to:													TAT:			
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											
127 NHH-W •	8/15/17	0938		X	5 gal. bucket	SD	4°C	NA	X								2 buckets		
128 NHH-X •	8/13/17	1545		X	(	(	(	(	X								2 buckets
129 NHH-Y •	8/8/17	1037		X	(	(	(	(	X								3 buckets
130 NHH-Z •	8/8/17	1153		X	(	(	(	(	X								6 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencer ESI				Date: 08/18/17		Analytical Laboratory (Destination): ESI Notes: See page 1 of 3								
Signature:			Time: 1300		Signature:				Time: 1300										
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)				Date:										
Signature:			Time:		Signature:				Time:										
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)				Date:		Sample Shipped Via: AECOM Temp blank								
Signature:			Time:		Signature:				Time:										
											UPS FedEx Courier (Other) Yes (No)								

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 3

STUDY NO: 29516
 SDG No:
 Project: FNP: New Haven Harbor
 Delivered via: Client
 Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
 Received By: JTP Logged into Lab by: KC 
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: No Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
 Number of COC Pages: 5
 COC Serial Number(s): See CoCs
 COC Complete: Yes * Does the info on the COC match the samples? Yes *
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes *
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
 Were all samples received? Yes Were VOC vials free of headspace? NA
 Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-Z	29516-001	S	Hold:Composite	2x5 Gal.	4C	
NHH-Z	29516-002	S	Hold:Composite	4x5 Gal.	4C	
NHH-P	29516-003	S	Hold:Composite	1x5 Gal.	4C	
NHH-P	29516-004	S	Hold:Composite	2x5 Gal.	4C	
NHH-L	29516-005	S	Hold:Composite	1x5 Gal.	4C	
NHH-L	29516-006	S	Hold:Composite	1x5 Gal.	4C	
NHH-J	29516-007	S	Hold:Composite	2x5 Gal.	4C	
NHH-J	29516-008	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-009	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-010	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-011	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-012	S	Hold:Composite	1x5 Gal.	4C	
NHH-B	29516-013	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-014	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-015	S	Hold:Composite	1x5 Gal.	4C	
NHH-O	29516-016	S	Hold:Composite	2x5 Gal.	4C	
NHH-O	29516-017	S	Hold:Composite	1x5 Gal.	4C	
NHH-Y	29516-018	S	Hold:Composite	2x5 Gal.	4C	
NHH-Y	29516-019	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-020	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-021	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-022	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-023	S	Hold:Composite	1x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *u*
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-N	29516-024	S	Hold:Composite	1x5 Gal.	4C	
NHH-N	29516-025	S	Hold:Composite	1x5 Gal.	4C	
NHH-A	29516-026	S	Hold:Composite	1x5 Gal.	4C	
NHH-C	29516-027	S	Hold:Composite	5x5 Gal.	4C	
NHH-C	29516-028	S	Hold:Composite	2x5 Gal.	4C	
NHH-D	29516-029	S	Hold:Composite	1x5 Gal.	4C	
NHH-D	29516-030	S	Hold:Composite	2x5 Gal.	4C	
NHH-T	29516-031	S	Hold:Composite	1x5 Gal.	4C	
NHH-T	29516-032	S	Hold:Composite	3x5 Gal.	4C	
NHH-E	29516-033	S	Hold:Composite	2x5 Gal.	4C	
NHH-E	29516-034	S	Hold:Composite	2x5 Gal.	4C	
NHH-S	29516-035	S	Hold:Composite	1x5 Gal.	4C	
NHH-S	29516-036	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-037	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-038	S	Hold:Composite	2x5 Gal.	4C	
NHH-H	29516-039	S	Hold:Composite	3x5 Gal.	4C	
NHH-H	29516-040	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-041	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-042	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-043	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-044	S	Hold:Composite	1x5 Gal.	4C	
NHH-X	29516-045	S	Hold:Composite	2x5 Gal.	4C	
NHH-X	29516-046	S	Hold:Composite	2x5 Gal.	4C	

Notes and qualifications: 29516-024 S Hold:Composite

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 3 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *kc*

Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____



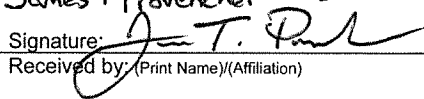
Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
CLDS-Ref	29516-047 S		Hold:Composite	4x5 Gal.	4C	
NHC-I	29516-048 W		Hold:Composite	7x5 Gal.	4C	
NHC-V	29516-049 W		Hold:Composite	12x5 Gal.	4C	
NHC-F	29516-050 W		Hold:Composite	6x5 Gal.	4C	
CLDS-Ref-Top	29516-051 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Mid	29516-052 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Bottom	29516-053 W		Hold:Composite	2x5 Gal.	4C	
NHH-Q **	29516-054 S		Hold:Composite	4x5 Gal.	4C	
NHH-U **	29516-055 S		Hold:Composite	5x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

** Samples denoted on original chain of custody, not on revised documents discussed above.

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type		Preservation				
Project Number:		Field Logbook No.:												Matrix Codes:						
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:		Dredge Sediment Eval (DSE)										DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Signature: 		Send Results/Report to:												TAT:						
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHH-Z	8/12	1350	X	X	5g bucket	SD	4°C	NA												2 buckets
NHH-Z	8/8	1153	X	X																4 buckets
NHH-P	8/12	0850	X	X																1 bucket
NHH-P	8/9	1219	X	X																2 buckets
NHH-L	8/15	1405	X	X																1 bucket
NHH-L	8/10	1300	X	X																1 bucket
NHH-J	8/15	1405	X	X																2 buckets
NHH-J	8/10	1141	X	X																1 bucket
NHH-F	8/16	1658	X	X																1 bucket
NHH-F	8/11	1600	X	X																2 buckets
NHH-M	8/13	1220	X	X																2 buckets
NHH-M	8/8	1610	X	X																1 bucket
NHH-RB	8/11	1157	X	X																1 bucket
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination): COLs amended and revised on 8/21/17												
Signature: 		Time: 1300		Signature: 		Time: 1300														
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:														
Signature:		Time:		Signature:		Time:														
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:														
Signature:		Time:		Signature:		Time:														
Sample Shipped Via:												Temp blank								
UPS FedEx Courier Other												Yes No								


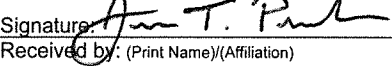
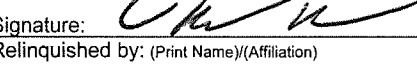
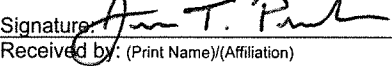


CHAIN OF CUSTODY RECORD

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Page 2 of 5

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number:		Field Logbook No.:												Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:																		
Signature: 		Send Results/Report to:																TAT:		
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	DSE										Lab I.D.	Remarks
NHH-W	8/9	1634		X	5g bucket	SD	4°C	NA	X											1 bucket
NHH-W	8/15	0938		X					X											1 bucket
NHH-O	8/14	1614		X					X											2 buckets
NHH-O	8/8	1445		X					X											1 bucket
NHH-Y	8/13	0820		X					X											2 buckets
NHH-Y	8/8	1153		X					X											1 bucket
NHH-G	8/17	0934		X					X											1 bucket
NHH-G	8/11	0837		X					X											1 bucket
NHH-K	8/10	1409		X					X											1 bucket
NHH-K	8/14	1232		X					X											1 bucket
NHH-N	8/13	1315		X					X											1 bucket
NHH-N	8/8	1305		X					X											1 bucket
NHH-A	8/11	1340		X					X											1 bucket
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencer ESI		Date: 8/18/17		Analytical Laboratory (Destination):												
Signature:		Time: 1300		Signature:		Time: 1300		COCs amended and revised 8/21/17												
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		AECOM												
Signature:		Time:		Signature:		Time:		Rich Bray - ESI 8/21/17												
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:												
Signature:		Time:		Signature:		Time:		UPS FedEx Courier Other												
								Temp blank												
								Yes No												

Client/Project Name: USACE - NHH - FNP			Project Location: New Haven Harbor			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°																								
Project Number:			Field Logbook No.:													Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product																								
Sampler (Print Name)/(Affiliation): C. Steve Hane AECOM			Chain of Custody Tape Nos.:																																							
Signature: 			Send Results/Report to:																	TAT:																						
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 5px;">DSE</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Lab I.D.</th> <th>Remarks</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> </div>										Lab I.D.	Remarks																						
Lab I.D.	Remarks																																									
27 NHH-C	8/17/17	1213	X	X	S _g bucket	SD	4°C	NA		5 buckets																																
28 NHH-C	8/1/17	1033	X	X						2 buckets																																
29 NHH-D	8/16	1443	X	X						1 bucket																																
30 NHH-D	8/11	1507	X	X						2 buckets																																
31 NHH-T	8/12	1220	X	X						1 bucket																																
32 NHH-T	8/8	1731	X	X						3 buckets																																
33 NHH-E	8/14	0832	X	X						2 buckets																																
34 NHH-E	8/16	1230	X	X						2 buckets																																
35 NHH-S	8/15	1158	X	X						1 bucket																																
36 NHH-S	8/10	0955	X	X						1 bucket																																
37 NHH-R	8/16	0829	X	X						1 bucket																																
38 NHH-R	8/10	0832	X	X						2 buckets																																
Relinquished by: (Print Name)/(Affiliation) C. Steve Hane AECOM			Date: 8/18/17			Received by: (Print Name)/(Affiliation) James T. Provencher ESI			Date: 8/18/17			Analytical Laboratory (Destination): COCs amended and revised 8/21/17  AECOM 8/21/17																														
Signature: 			Time: 1300			Signature: 			Time: 1300																																	
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:																																	
Signature:			Time:			Signature:			Time:																																	
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			Sample Shipped Via:																														
Signature:			Time:			Signature:			Time:			Temp blank																														
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			UPS FedEx Courier Other																														
Signature:			Time:			Signature:			Time:			Yes No																														



CHAIN OF CUSTODY RECORD

29516

Page 4 of 5

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°						
Project Number:		Field Logbook No.:												Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product						
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:																				
Signature: 		Send Results/Report to:																TAT:				
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	DSE										Lab I.D.	Remarks		
339 NHH-H	8/10	1548		X	5g bucket	SD	4°C	NA	X													3 buckets
40 NHH-B	8/16	1027		X					X													1 bucket
41 NHH-L	8/10	1746		X					X													1 bucket
42 NHH-I	8/17	1627		X					X													2 buckets
43 NHH-V	8/9	1745		X					X													2 buckets
44 NHH-V	8/15	1646		X					X													1 bucket
45 NHH-X	8/8	1153			CSH																	2 buckets
46 NHH-X	8/8	0922		X	5g bucket	SD	4°C	NA	X													2 buckets
47 NHH-X	8/12	1600		X					X													2 buckets
48 CLOS-Ref	8/17	0800		X					X													4 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination): COCs amended and revised 8/21/17														
Signature:		Time: 1300		Signature:		Time: 1300																
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:																
Signature:		Time:		Signature:		Time:																
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:												Sample Shipped Via:				
Signature:		Time:		Signature:		Time:												Temp blank				
																		UPS FedEx Courier Other				
																		Yes No				

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 1
 Composite Lab ID.: 29517-001 Composite Final Volume: 22 gallons
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 0840
 Initials: BG/JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-C	29516-027	Solid	—	≈ 2.5 gal/bag	≈ 24.5 gal/bag	gray to black sediment with lots of shell hash
↓	↓ -028	↓	↓	↓	↓	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 2
 Composite Lab ID.: 29517-002 Composite Final Volume: ≈ 28^{gallons} ^{ESD 08/21}
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/11/17 1x1 gallon bucket
 Composite Prepared Time: 0950
 Initials: RF JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-D	29516-029 030	Solid	—	—	≈ 10 gallons	
NHH-E	↓ - 033 034	Solid	—	≈ 7 ^{gallons} ^{ESD 08/21}	≈ 7 gallons	
NHH-F	↓ - 009 010	Solid	—	—	≈ 10 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 3
 Composite Lab ID.: 29517-003 Composite Final Volume: 31 gal
 Composite Matrix: Solid Composite Container(s): 6x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon buckets
 Composite Prepared Time: 1400
 Initials: W/ JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-G	29516-020 -021	Solid	—	—	~9 gallons	
NHH-H	↓ -039 -040	Solid	—	—	~9 gallons	
NHH-I	✓ -041 -042	Solid	—	—	~1 gallon	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 4
 Composite Lab ID.: 29517-004 Composite Final Volume: 23 gallons
 Composite Matrix: Solid Composite Container(s): 505 gallon bucket
 Composite Prepared Date: 08/21/17 10 gallon bucket
 Composite Prepared Time: 1445
 Initials: BO/STP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-J	29516- ⁰⁰⁷ ₀₀₈	Solid	—	—	~8 gallons	
NHH-K	↓ - ⁰²² ₀₂₃	Solid	—	—	~8 gallons	
NHH-L	↓ - ⁰⁰⁵ ₀₀₆	Solid	—	—	~9.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 5
 Composite Lab ID.: 29517-005 Composite Final Volume: ≈ 29 gallons
 Composite Matrix: Solid Composite Container(s): 6 x 5 gallon
 Composite Prepared Date: 08/21/17 1 x 1 gallon
 Composite Prepared Time: 1530
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-M	29516-011	Solid	—	—	≈ 9.5g	
NHH-N	↓ -024 -025	Solid	—	—	≈ 9g	
NHH-O	↓ -016 -017	Solid	—	—	≈ 10.5g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 6
 Composite Lab ID.: 29517-006 Composite Final Volume: 28 gallons
 Composite Matrix: Solid Composite Container(s): 7x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 1205
 Initials: BSG / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-P	29516-003 -004	Solid	—	—	~8.5 gallons	
NHH-Q	— -054	Solid	—	—	~14 gallons	
NHH-R	— -037 -038	Solid	—	—	~7 gallons	
NHH-S	↓ -035 -036	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 7
 Composite Lab ID.: 29517-007 Composite Final Volume: 31 gallons
 Composite Matrix: Solid Composite Container(s): 7 x 5 gallon buckets
 Composite Prepared Date: 08/21/17 1 x 1 gallon bucket
 Composite Prepared Time: 1540
 Initials: BGI JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-T	29516-031 -032	Solid	—	—	~9.5 gallons	
NHH-U	↓ -055	Solid	—	—	~14.5 gallons	
NHH-V	-043 -044	Solid	—	—	~7 gallons	
NHH-W	↓ -014 -015	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 8
 Composite Lab ID.: 29517-008 Composite Final Volume: ~26 gallons
 Composite Matrix: Solid Composite Container(s): 50 gallon buckets
 Composite Prepared Date: 08/21/17 100 gallon bucket
 Composite Prepared Time: 1130
 Initials: DB / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-X	29516-045 046	Solid	—	—	~9.5 gallons	
NHH-Y	↓ -018 019	Solid	—	—	~8.5 gallons	
NHH-Z	↓ -001 002	Solid	—	—	~11.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite Reference Site Water
 Composite Lab ID.: 29517-010 Composite Final Volume: 30 gal
 Composite Matrix: Water Composite Container(s): 6x5gal
 Composite Prepared Date: 08/21/17
 Composite Prepared Time: 1445
 Initials: DD
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
CLDS-Ref-Bottom	29516-001 ⁰⁵³	Water	—	—	10 gal	
CLDS-Ref-Mid	29516-003 ⁰⁵²	Water	—	—	10 gal	
CLDS-Ref-Top	29516-004 ⁰⁵¹	Water	—	—	10 gal	
	③ 29517-010 ^{MR}					

Subsamples Removed:

Lab Number	Sample Use
29521	Elutriate Preparation

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES	TIMES	
Sample ID	Elutriate 1	Time Mixing Started	1255
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <u>No</u>
Amount of Overlying	36 L	Time Mixing Stopped	1325
		Time Elutriate Siphoned Off	1425
		Centrifuged?	<u>Yes</u> No
Preparer's Initials	<u>JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 1	29521-002	Composite 1	29517-001	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES	TIMES	
Sample ID	Elutriate 2	Time Mixing Started	0925
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	0955
		Time Elutriate Siphoned Off	1055
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	BG/JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 2	29521-004	Composite 2	29517-002	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 3	Time Mixing Started	1140
Amount of Sediment	12 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	48 L	Time Mixing Stopped	1210
		Time Elutriate Siphoned Off	1310
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 3	29521-006	Composite 3	29517-003	NHC-I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 18 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/22/17	ESI Study: 29521
Client: AECOM	Project: New Haven

VOLUMES	TIMES
Sample ID <u>Elutriate 4</u>	Time Mixing Started <u>1042</u>
Amount of Sediment <u>9 L</u>	Hand Mixed Every 10 Minutes? Yes <input checked="" type="radio"/> No <input type="radio"/>
Amount of Overlying <u>36 L</u>	Time Mixing Stopped <u>1112</u>
	Time Elutriate Siphoned Off <u>1212</u>
	Centrifuged? <input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials <u>BG/JTP</u>	

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 4	29521-008	Composite 4	29517-004	NHC-F	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

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ESI

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.

One Lafayette Road

P.O. Box 778

Hampton, N.H. 03843-0778

p 603.926.3345 • f 603.926.3521

envirosystems.com

Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID Elutriate 5 Time Mixing Started 0850

Amount of Sediment 9 L Hand Mixed Every 10 Minutes? Yes ☒ No

Amount of Overlying 36 L Time Mixing Stopped 0920

Time Elutriate Siphoned Off 1020

Centrifuged? ☒ Yes ☐ No

Preparer's Initials B6/JTP

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 5	29521-010	Composite 5	29517-005	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 18 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.
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Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID	Elutriate 6	Time Mixing Started	0930
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	1000
		Time Elutriate Siphoned Off	1100
		Centrifuged?	<input checked="" type="radio"/> Yes No

Preparer's Initials

JIP

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 6	29521-012	Composite 6	29517-006	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778

Client: AECOM

Project: New Haven

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envirosystems.com

VOLUMES

TIMES

Sample ID	Elutriate 7	Time Mixing Started	0750
Amount of Sediment	12 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	48 L	Time Mixing Stopped	0820
		Time Elutriate Siphoned Off	0920
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	BG/ JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 7	29521-014	Composite 7	29517-007	NHC-V	29516-049

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/23/17

ESI Study: 29521

EnviroSystems, Inc.

One Lafayette Road

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Client: AECOM

Project: New Haven

Hampton, N.H. 03843-0778

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VOLUMES

TIMES

Sample ID	Elutriate 8	Time Mixing Started	1053
Amount of Sediment	9 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	36 L	Time Mixing Stopped	1123
		Time Elutriate Siphoned Off	1223
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No

Preparer's Initials

JTP

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 8	29521-016	Composite 8	29517-008	NHC-V	29516-049

Sub-samples Removed

☒ JTP
 08/23/17

Lab Code	Elutriate Use	Volume
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29522	Elutriate Chemical Analysis	~ 11 L
29523	SPP Assays	~ 6 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID	Elutriate 1	Time Mixing Started	0800
Amount of Sediment	2 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="checkbox"/> No
Amount of Overlying	8 L	Time Mixing Stopped	0830
		Time Elutriate Siphoned Off	0930
Preparer's Initials	JTP	Centrifuged?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 1 Blank <input checked="" type="checkbox"/> MR 8/30/17	29521-017	Composite 1	29517-001	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

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ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 2		Time Mixing Started <u>0905</u>
Amount of Sediment	<u>2</u> L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	<u>8</u> L	Time Mixing Stopped	<u>0935</u>
		Time Elutriate Siphoned Off	<u>1035</u>
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	<u>JTP</u>		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 2	29521-018	Composite 2	29517-002	NHC-F	29516-050

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

VOLUMES

TIMES

Sample ID	Elutriate 3	Time Mixing Started	0905
Amount of Sediment	2 L	Hand Mixed Every 10 Minutes?	Yes No
Amount of Overlying	8 L	Time Mixing Stopped	0935
		Time Elutriate Siphoned Off	1035
		Centrifuged?	<u>Yes</u> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 3	29521-019	Composite 3	29517-003	NHC-I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

Date: 08/25/17

ESI Study: 29521

Client: AECOM

Project: New Haven

	VOLUMES		TIMES
Sample ID	Elutriate 4	Time Mixing Started	0943
Amount of Sediment	2 L	Hand Mixed Every 10 Minutes?	Yes <input checked="" type="radio"/> No
Amount of Overlying	8 L	Time Mixing Stopped	1013
		Time Elutriate Siphoned Off	1113
		Centrifuged?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Preparer's Initials	JTP		

Elutriate ID	ESI Elutriate Code	Sediment ID	ESI Sediment Code	Overlying Water ID	ESI Overlying Water Code
Elutriate 4	29521-020	Composite 4	29517-004	NHC-I	29516-048

Sub-samples Removed

Lab Code	Elutriate Use	Volume
29523	SPP Assays	~ 4 L

NOTES: _____

ELUTRIATE PREPARATION SUMMARY

P:\General Projects\RPT-Active\DSE AECOM - New Haven Harbor FNP\Elutriate Prep.wpd

PREPARATION of DILUTIONS

STUDY: 29523 CLIENT: AECOM DILUENT: CLDS (Reference Water)
 SPECIES: *A. bahia* and *M. beryllina* TEST: Suspended Particulate Phase (SPP)

Diluent: CLDS	Composite #: 1		Composite #: 2		Composite #: 3		Composite #: 4	
Concentration	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)
Lab	0	2000	0	2000	0	2000	0	2000
CLDS	0	↓	0	↓	0	↓	0	↓
1 %	20	↓	20	↓	20	↓	20	↓
10 %	200	↓	200	↓	200	↓	200	↓
50 %	1000	↓	1000	↓	1000	↓	1000	↓
100 %	2000	↓	2000	↓	2000	↓	2000	↓
Initial	Kc		W		W		CFS	
Date	8/22/17		8/22/17		8/22/17		08/22/17	
Time	1435 (E3) 8/22 1540		1435		1435		1610	
	Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)	
Initial Salinity (ppt)	27.4 26.46 (E3) 8/22		26.6		26.64 (E3) 8/22		26.4	
Vol of Elutriate (mL)	5800		5880		5800		5760	
Grams of Salt (g)	17		23		24 5880 (E3) 8/22		24	
Lot number of Salt	A- 4682		A- 4682		A- 4682		A- 4682	
Final Salinity	30		30		30		30	
Date & Initial	8/22/17 W		08/22/17 CFS		8/22/17 W		08/22/17 CFS	
Ammonia pulled on 100% SPP and Controls	Start 29521 -002	End (Ab) -106	Start 29521 -004	End (Ab) -107	Start 29521 -006	End (Ab) -108	Start 29521 -008	End (Ab) -109
	to (E3) 8/22	End (Mb)		End (Mb)		End (Mb)		End (Mb)

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID:

Test Species: *A. bahia*

Lot ID: 03 Ab AR0082217

Sample: Controls

Diluent: CLDS

SURVIVAL - Controls

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
LAB control water)	A	10	10	10	10	10	10	10	CLDS (Reference Water)	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	9	9	9	9
Initials		MW	u	u	MW	MW	AK	GRS	Comments:								
Date		08/22/17	8/22/17	8/22/17	8/23/17	8/24/17	8/25/17	08/26/17									
Time		1540	1640	1740	1405	1500	1500	1440									

Notes

Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
LAB	A	7.0	7.3	7.1	6.1	6.4	7.94	7.91	7.85	7.85	7.81	24	20	20	20	20	30	30	31	31	31	NA	NA	NA		
CLDS	A	7.9	6.8	6.8	6.0	6.1	7.85	7.84	7.84	7.85	7.86	22	20	20	20	20	28	28	29	30	30	NA	NA	NA		
Initials		UB	MW	AK	UB	BSG		RECORD OF METERS USED									Water Quality Station #1					Water Quality Station #2				
Date		8/22/17	8/23/17	8/24/17	8/25	08/26/17		Exposure (Hours)									DO Meter #		24	DO Meter #		4701				
Time		1550	1241	1350	1345	1045						0	24	48	72	96	DO Probe #		95	DO Probe #		↓				
Incub. Temp		24	24	20	20	20		Water Quality Station #				1	1	1	1	Z	pH Meter #		1097	pH Meter #		470				
FEEDING: Artemia nauplii (A - 4729)						Thermometer or Probe #				YS130D	YS130D	YS130D	YS130D	YS130D	pH Probe #		147	pH Probe #		146						
Fed By:		MW	KB	MW	AK			Initial				UB	MW	AK	UB	BSG	Salinity Meter #		YS130D	Salinity Meter #		YS130D				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 1

Diluent: CLDS

SURVIVAL - Composite # 1

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	9	10	9	9		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	9	9	9		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	9	9	9	9		E	10	10	10	9	9	9	9

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW	KB	KB	MW	MW	AK	GRS
Date	8/22/17	8/22/17	8/22/17	8/22/17	8/22/17	8/25/17	8/25/17
Time	1620	1720	1800	1420	1515	1520	1440

Comments:

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.6	6.7	7.3	5.6	5.6	7.80	7.84	7.92	7.80	7.83	23	18	19	20	20	27	28	29	29	29			NA		
10 %	A	7.7	6.6	7.3	6.4	5.6	7.87	7.86	8.01	7.96	7.86	23	18	19	20	20	28	29	29	30	30			NA		
50 %	A	7.6	6.5	7.1	6.4	6.3	7.96	7.92	8.02	7.96	7.85	23	19	19	20	20	29	29	30	30	30			NA		
100 %	A	6.5	6.5	7.0	6.3	5.4	8.03	7.97	8.05	7.99	7.92	23	19	19	20	20	30	30	31	32	32			NA		
Initials		KB	MW	AK	LB	TSB	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date		8/22/17	8/23/17	8/24/17	8/25	8/24/17	Exposure (Hours)										DO Meter #					DO Meter #				
Time		1620	1245	1430	1345	1045											DO Probe #					DO Probe #				
Incub. Temp		24	24	20	20	20											pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A-4729)																	pH Probe #					pH Probe #				
Fed By:		MW	KB	MW	AK		Initial										Salinity Meter #					Salinity Meter #				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 2

Diluent: CLDS

SURVIVAL - Composite # 2

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	9	9	9	9
	C	10	10	10	9	9	9	9		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	9	9	9	9
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	9	9	9	9
Initials		MW	K	K	MW	MW	AK	GRS	Comments:								
Date		8/22/17	8/22/17	8/22/17	8/23/17	8/24/17	8/25/17	8/26/17									
Time		1600	1700	1800	1400	1530	1540	1440									

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.2	6.8	7.4	5.8	6.0	7.83	7.87	8.05	7.89	7.90	25	18	19	20	20	28	28	29	29	29					
10 %	A	7.2	6.9	7.4	5.5	6.0	7.88	7.92	8.08	7.94	7.92	26	18	19	20	20	28	28	29	30	30					
50 %	A	6.9	6.8	7.4	5.5	6.5	7.95	8.06	8.12	8.11	8.06	25	18	19	20	20	29	29	30	30	31					
100 %	A	6.3	6.9	7.2	5.1	6.3	7.98	8.13	8.12	8.17	8.18	25	18	19	20	20	30	30	31	32	32					
Initials		LB	MW	AK	LB	GRS		RECORD OF METERS USED									Water Quality Station #1					Water Quality Station #2				
Date		8/22/17	8/23/17	8/24/17	8/25	8/26/17		Exposure (Hours)									DO Meter #		24	DO Meter #		MPO1				
Time		1550	1251	1440	1345	1045							0	24	48	72	96	DO Probe #		95	DO Probe #		↓			
Incub. Temp		24	24	20	20	20		Water Quality Station #					1	1	1	1	2	pH Meter #		1097	pH Meter #		470			
FEEDING: <i>Artemia nauplii</i> (A - 4729)								Thermometer or Probe #					YS130D	YS130D	YS130D	YS130D	YS130D	pH Probe #		147	pH Probe #		146			
Fed By:		MW	KB	MW	AK			Initial					LB	MW	AK	LB	GRS	Salinity Meter #		YS130D	Salinity Meter #		YS130D			

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 3

Diluent: CLDS

SURVIVAL - Composite # 3

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	9	9	9	9	50 %	A	10	10	10	9	9	9	8
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	9	9	9	9		C	10	10	10	10	10	10	9
	D	10	10	10	10	9	9	9		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	9		E	10	10	10	10	10	10	10
10 %	A	10	10	10	9	9	9	9	100 %	A	10	10	10	9	9	9	9
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	9	9	9	9		D	10	10	10	10	10	9	9
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW	MB	MW	MW	AK	MB	Comments:										
Date	8/22/17	8/22/17	8/22/17	8/23/17	8/24/17	8/25/17	@ 10:25/17 - Braker spilled - 2 mysids spilled but recovered.										
Time	1540	1705	1740	1415	1545	1605											

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.8	7.2	7.2	6.4	6.6	7.85	7.91	8.05	8.00	7.93	23	17	19	20	19	28	28	29	29	30			NA		
10 %	A	7.6	7.2	7.2	5.8	6.5	7.86	7.89	8.04	7.90	7.92	23	17	19	20	19	28	28	29	30	30			NA		
50 %	A	7.2	7.1	6.9	5.6	6.6	7.89	7.96	8.02	7.96	7.92	24	17	19	20	19	29	29	30	30	31			NA		
100 %	A	6.4	7.1	7.1	5.0	6.4	7.91	8.00	8.04	7.99	8.09	25	18	19	20	19	30	30	31	32	32			NA		

RECORD OF METERS USED		Water Quality Station #1					Water Quality Station #2				
Exposure (Hours)		DO Meter #					DO Meter #				
		DO Probe #					DO Probe #				
Water Quality Station #		pH Meter #					pH Meter #				
Thermometer or Probe #		pH Probe #					pH Probe #				
Initial		Salinity Meter #					Salinity Meter #				
Initials	LB	MW	AK	LB	MB						
Date	8/22/17	8/23/17	8/24/17	8/25	8/26/17						
Time	1550	1255	1435	1345	1045						
Incub. Temp	24	24	24	20	20						
FEEDING: <i>Artemia nauplii</i> (A - 4729)											
Fed By:	MW	KB	MW	AK							

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 4

Diluent: CLDS

SURVIVAL - Composite # 4

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	9	9	9	9
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	9	9
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	9		E	10	10	10	10	10	10	10

Notes

Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW	MW	MW	MW	AK	CFS	Comments:
Date	8/22/17	8/22/17	8/22/17	8/23/17	8/24/17	8/25/17	
Time	1640	1740	1830	1443	1555	1430	

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.5	7.0	6.6	6.2	5.3	7.82	7.77	7.82	7.90	7.85	23	18	20	20	19	27	28	28	29	28			NA		
10 %	A	7.5	6.7	6.9	6.4	6.0	7.87	7.88	7.92	7.99	7.87	23	18	20	20	19	28	28	29	29	29			NA		
50 %	A	7.2	6.7	6.6	5.4	5.8	7.94	8.05	8.08	8.04	8.01	24	18	20	20	19	29	29	30	30	30			NA		
100 %	A	6.3	6.6	6.9	6.3	6.0	7.96	8.11	8.13	8.13	8.13	24	18	20	20	19	30	30	31	31	32			NA		

Initials	KB	MW	AK	LB	JB	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date	8/22/17	8/23/17	8/24/17	8/25	08/26/17	Exposure (Hours)										DO Meter #					DO Meter #				
Time	1645	1300	1425	1345	1045											DO Probe #					DO Probe #				
Incub. Temp	24	24	20	20	20	Water Quality Station #										pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A-4729)						Thermometer or Probe #										pH Probe #					pH Probe #				
Fed By:	MW	KB	MW	AK		Initial										Salinity Meter #					Salinity Meter #				



03AB AR0082217

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species AMERICAMYSIS bahia

Source: Lab reared _____ Hatchery reared _____ Field collected _____

Hatch date 8-19-17 Receipt date _____Lot number 081917MS Strain _____Brood origination FLORIDA

II. Water Quality

Temperature 25 °C Salinity ~28 ppt D.O. _____ ppmpH 7.8 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater ☒ Other _____Recirculating ☒ Flow through _____ Static renewal _____DIET: Flake food ☒ Phytoplankton _____ Trout chow _____Artemia ☒ Rotifers _____ YCT _____ Other ENCAP SHRIMP DIET

Prophylactic treatments: _____

Comments: _____

IV. Shipping Information

Client: EST # of Organisms 1800+Carrier: _____ Date shipped 8-22-17Biologist: Mark DossingerPO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

CETIS Test Data Worksheet

Report Date: 29 Aug-17 14:35 (p 1 of 1)
Test Code/ID: 17-9978-7137/29523-1Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 22 Aug-17 15:40		Species: Americamysis bahia		Sample Code: 29521-002					
End Date: 26 Aug-17		Protocol: EPA/821/R-02-012 (2002)		Sample Source: New Haven Harbor FNP -2017					
Sample Date: 22 Aug-17 14:25		Material: Dredged Sediment Suspended Particulat		Sample Station: Composite 1					
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	9	10				10	
0	D	2	16	10				10	
0	D	3	10	10				10	
0	D	4	26	10				10	
0	D	5	6	10				9	
0	L	1	1	10				10	
0	L	2	25	10				10	
0	L	3	2	10				10	
0	L	4	13	10				10	
0	L	5	15	10				10	
1		1	14	10				10	
1		2	27	10				10	
1		3	24	10				9	
1		4	20	10				10	
1		5	11	10				10	
10		1	4	10				10	
10		2	18	10				9	
10		3	3	10				10	
10		4	21	10				10	
10		5	22	10				9	
50		1	8	10				10	
50		2	5	10				10	
50		3	29	10				10	
50		4	23	10				10	
50		5	30	10				10	
100		1	28	10				10	
100		2	17	10				10	
100		3	7	10				10	
100		4	19	10				10	
100		5	12	10				9	

CETIS Summary Report

Report Date: 29 Aug-17 16:55 (p 1 of 1)
Test Code: 29523-1Ab | 17-9978-7137

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	18-6735-7176		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	22 Aug-17 15:40		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	26 Aug-17		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	80h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	17-2717-2356		Code:	29521-002			Client:	AECOM			
Sample Date:	22 Aug-17 14:25		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	22 Aug-17 10:55		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	75m		Station:	Composite 1							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
05-8523-5824	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
05-8523-5824	96h Proportion Survived		Control Resp	0.98	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
10		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	0.900	1.000	1.000					
10		1.000	0.900	1.000	1.000	0.900					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	0.900					

CETIS Analytical Report

Report Date: 29 Aug-17 16:55 (p 1 of 1)
 Test Code: 29523-1Ab | 17-9978-7137

Americamysis 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 05-8523-5824	Endpoint: 96h Proportion Survived	CETIS Version: CETISv1.9.3									
Analyzed: 29 Aug-17 16:53	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes									
Batch ID: 18-6735-7176	Test Type: Survival (96h)	Analyst: Amanda Komarek									
Start Date: 22 Aug-17 15:40	Protocol: EPA/821/R-02-012 (2002)	Diluent: CLIS Reference Site									
Ending Date: 26 Aug-17	Species: Americamysis bahia	Brine: Generic commercial salts									
Duration: 80h	Source: ARO - Aquatic Research Organisms, NH	Age: <5									
Sample ID: 17-2717-2356	Code: 29521-002	Client: AECOM									
Sample Date: 22 Aug-17 14:25	Material: Dredged Sediment Suspended Particulate	Project: Dredged Sediment Evaluation									
Receipt Date: 22 Aug-17 10:55	Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 75m	Station: Composite 1										
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	112086	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.82	0.7943	No Outliers Detected						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.980	0.900	1.000	0.045	4.56%	0.0%	49/50	0.98	0.0%
1		5	0.980	0.900	1.000	0.045	4.56%	0.0%	49/50	0.98	0.0%
10		5	0.960	0.900	1.000	0.055	5.71%	2.04%	48/50	0.98	0.0%
50		5	1.000	1.000	1.000	0.000	0.00%	-2.04%	50/50	0.98	0.0%
100		5	0.980	0.900	1.000	0.045	4.56%	0.0%	49/50	0.98	0.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
1		1.000	1.000	0.900	1.000	1.000					
10		1.000	0.900	1.000	1.000	0.900					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	0.900					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 14:40 (p 1 of 1)
Test Code/ID: 00-2774-7195/29523-2Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 22 Aug-17 15:40		Species: Americamysis bahia			Sample Code: 29521-004				
End Date: 26 Aug-17		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 22 Aug-17 10:55		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 2				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	20	10				10	
0	D	2	8	10				10	
0	D	3	3	10				10	
0	D	4	12	10				10	
0	D	5	7	10				9	
0	L	1	4	10				10	
0	L	2	24	10				10	
0	L	3	14	10				10	
0	L	4	9	10				10	
0	L	5	15	10				10	
1		1	26	10				10	
1		2	29	10				10	
1		3	27	10				9	
1		4	18	10				10	
1		5	23	10				10	
10		1	13	10				10	
10		2	17	10				10	
10		3	1	10				10	
10		4	28	10				10	
10		5	16	10				10	
50		1	11	10				10	
50		2	2	10				9	
50		3	21	10				10	
50		4	25	10				10	
50		5	19	10				9	
100		1	30	10				10	
100		2	10	10				10	
100		3	22	10				10	
100		4	6	10				10	
100		5	5	10				9	

CETIS Summary Report

Report Date: 29 Aug-17 16:57 (p 1 of 1)
Test Code: 29523-2Ab | 00-2774-7195

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	18-6735-7176	Test Type:	Survival (96h)			Analyst:	Amanda Komarek				
Start Date:	22 Aug-17 15:40	Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site				
Ending Date:	26 Aug-17	Species:	Americamysis bahia			Brine:	Generic commercial salts				
Duration:	80h	Source:	ARO - Aquatic Research Organisms, NH			Age:	<5				
Sample ID:	01-1641-3669	Code:	29521-004			Client:	AECOM				
Sample Date:	22 Aug-17 10:55	Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation				
Receipt Date:	22 Aug-17 10:55	Source:	New Haven Harbor FNP -2017 (NHHarborF								
Sample Age:	5h	Station:	Composite 2								
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
20-5158-5943	96h Proportion Survived	Linear Interpolation (ICPIN)				EC50	>100	n/a	n/a	<1	
Test Acceptability											
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision				
20-5158-5943	96h Proportion Survived	Control Resp	0.98	0.9	>>	Yes	Passes Criteria				
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
50		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	0.900	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	0.900	1.000	1.000	0.900					
100		1.000	1.000	1.000	1.000	0.900					

CETIS Analytical Report

Report Date: 29 Aug-17 16:57 (p 1 of 1)
Test Code: 29523-2Ab | 00-2774-7195

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 20-5158-5943		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 16:56		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-6735-7176		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 22 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 26 Aug-17		Species: Americamysis bahia		Brine: Generic commercial salts							
Duration: 80h		Source: ARO - Aquatic Research Organisms, NH		Age: <5							
Sample ID: 01-1641-3669		Code: 29521-004		Client: AECOM							
Sample Date: 22 Aug-17 10:55		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 22 Aug-17 10:55		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Linear Interpolation Options											
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method	
Log(X+1)		Linear		999291		200		Yes		Two-Point Interpolation	
Residual Analysis											
Attribute		Method		Test Stat		Critical		P-Value		Decision(α:5%)	
Extreme Value		Grubbs Extreme Value Test		2.07		2.82		0.7943		No Outliers Detected	
Point Estimates											
Level		%		95% LCL		95% UCL		TU		95% LCL 95% UCL	
EC50		>100		n/a		n/a		<1		n/a n/a	
96h Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%		Code		Count		Mean		Min		Max	
0		D		5		0.980		0.900		1.000	
1				5		0.980		0.900		1.000	
10				5		1.000		1.000		1.000	
50				5		0.960		0.900		1.000	
100				5		0.980		0.900		1.000	
96h Proportion Survived Detail											
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4	
0		D		1.000		1.000		1.000		1.000	
1				1.000		1.000		0.900		1.000	
10				1.000		1.000		1.000		1.000	
50				1.000		0.900		1.000		1.000	
100				1.000		1.000		1.000		1.000	

CETIS Test Data Worksheet

Report Date: 29 Aug-17 14:49 (p 1 of 1)
Test Code/ID: 13-0433-7300/29523-3Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 22 Aug-17 15:40		Species: Americamysis bahia			Sample Code: 29521-006				
End Date: 26 Aug-17		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 22 Aug-17 13:10		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 3				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	25	10				10	
0	D	2	6	10				10	
0	D	3	4	10				10	
0	D	4	7	10				10	
0	D	5	24	10				9	
0	L	1	10	10				10	
0	L	2	19	10				10	
0	L	3	12	10				10	
0	L	4	20	10				10	
0	L	5	16	10				10	
1		1	28	10				9	
1		2	11	10				10	
1		3	22	10				9	
1		4	13	10				9	
1		5	5	10				9	
10		1	26	10				9	
10		2	8	10				10	
10		3	14	10				10	
10		4	17	10				9	
10		5	18	10				10	
50		1	27	10				8	
50		2	1	10				10	
50		3	2	10				9	
50		4	15	10				10	
50		5	30	10				10	
100		1	29	10				9	
100		2	21	10				10	
100		3	23	10				10	
100		4	9	10				9	
100		5	3	10				10	

CETIS Summary Report

Report Date: 29 Aug-17 16:59 (p 1 of 1)
Test Code: 29523-3Ab | 13-0433-7300

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	18-6735-7176		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	22 Aug-17 15:40		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	26 Aug-17		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	80h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	03-6036-7803		Code:	29521-006			Client:	AECOM			
Sample Date:	22 Aug-17 13:10		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	22 Aug-17 13:10		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	3h		Station:	Composite 3							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
07-9291-1710	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Lower	Upper	Overlap	Decision	
07-9291-1710	96h Proportion Survived		Control Resp	0.98	0.9	>>			Yes	Passes Criteria	
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
1		5	0.920	0.864	0.976	0.900	1.000	0.020	0.045	4.86%	6.12%
10		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
50		5	0.940	0.829	1.000	0.800	1.000	0.040	0.089	9.52%	4.08%
100		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
0	L	1.000	1.000	1.000	1.000	1.000					
1		0.900	1.000	0.900	0.900	0.900					
10		0.900	1.000	1.000	0.900	1.000					
50		0.800	1.000	0.900	1.000	1.000					
100		0.900	1.000	1.000	0.900	1.000					

CETIS Analytical Report

Report Date: 29 Aug-17 16:58 (p 1 of 1)
Test Code: 29523-3Ab | 13-0433-7300

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 07-9291-1710		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 16:58		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-6735-7176		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 22 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 26 Aug-17		Species: Americamysis bahia		Brine: Generic commercial salts							
Duration: 80h		Source: ARO - Aquatic Research Organisms, NH		Age: <5							
Sample ID: 03-6036-7803		Code: 29521-006		Client: AECOM							
Sample Date: 22 Aug-17 13:10		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 22 Aug-17 13:10		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 3h		Station: Composite 3									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method			
Log(X+1)		Linear		1503231	200	Yes		Two-Point Interpolation			
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.43	2.82	0.2484	No Outliers Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.980	0.900	1.000	0.045	4.56%	0.0%	49/50	0.98	0.0%
1		5	0.920	0.900	1.000	0.045	4.86%	6.12%	46/50	0.945	3.57%
10		5	0.960	0.900	1.000	0.055	5.71%	2.04%	48/50	0.945	3.57%
50		5	0.940	0.800	1.000	0.089	9.52%	4.08%	47/50	0.945	3.57%
100		5	0.960	0.900	1.000	0.055	5.71%	2.04%	48/50	0.945	3.57%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
1		0.900	1.000	0.900	0.900	0.900					
10		0.900	1.000	1.000	0.900	1.000					
50		0.800	1.000	0.900	1.000	1.000					
100		0.900	1.000	1.000	0.900	1.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 14:53 (p 1 of 1)
Test Code/ID: 01-5128-6765/29523-4Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 22 Aug-17 15:40		Species: Americamysis bahia			Sample Code: 29521-008				
End Date: 26 Aug-17		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 22 Aug-17 12:12		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 4				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	19	10				10	
0	D	2	4	10				10	
0	D	3	3	10				10	
0	D	4	17	10				10	
0	D	5	12	10				9	
0	L	1	7	10				10	
0	L	2	16	10				10	
0	L	3	8	10				10	
0	L	4	9	10				10	
0	L	5	2	10				10	
1		1	13	10				10	
1		2	18	10				10	
1		3	30	10				10	
1		4	22	10				10	
1		5	28	10				10	
10		1	15	10				10	
10		2	27	10				10	
10		3	1	10				10	
10		4	21	10				10	
10		5	14	10				9	
50		1	20	10				10	
50		2	10	10				9	
50		3	24	10				10	
50		4	26	10				10	
50		5	6	10				10	
100		1	25	10				10	
100		2	29	10				9	
100		3	11	10				10	
100		4	5	10				10	
100		5	23	10				10	

CETIS Summary Report

Report Date: 29 Aug-17 17:01 (p 1 of 1)
Test Code: 29523-4Ab | 01-5128-6765

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	18-6735-7176		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	22 Aug-17 15:40		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	26 Aug-17		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	80h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	17-0382-9713		Code:	29521-008			Client:	AECOM			
Sample Date:	22 Aug-17 12:12		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	22 Aug-17 12:12		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	3h		Station:	Composite 4							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
04-1622-2066	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
04-1622-2066	96h Proportion Survived		Control Resp	0.98	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
10		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
50		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	0.900					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	0.900					
50		1.000	0.900	1.000	1.000	1.000					
100		1.000	0.900	1.000	1.000	1.000					

CETIS Analytical Report

Report Date: 29 Aug-17 17:01 (p 1 of 1)
Test Code: 29523-4Ab | 01-5128-6765

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 04-1622-2066		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:00		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-6735-7176		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 22 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 26 Aug-17		Species: Americamysis bahia		Brine: Generic commercial salts							
Duration: 80h		Source: ARO - Aquatic Research Organisms, NH		Age: <5							
Sample ID: 17-0382-9713		Code: 29521-008		Client: AECOM							
Sample Date: 22 Aug-17 12:12		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 22 Aug-17 12:12		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 3h		Station: Composite 4									
Linear Interpolation Options											
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method	
Log(X+1)		Linear		1556176		200		Yes		Two-Point Interpolation	
Residual Analysis											
Attribute		Method		Test Stat		Critical		P-Value		Decision(α:5%)	
Extreme Value		Grubbs Extreme Value Test		2.19		2.82		0.5456		No Outliers Detected	
Point Estimates											
Level		%		95% LCL		95% UCL		TU		95% LCL 95% UCL	
EC50		>100		n/a		n/a		<1		n/a n/a	
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%		Code		Count		Mean		Min		Max	
						Std Dev		CV%		%Effect	
0		D		5		0.980		0.900		1.000	
1				5		1.000		1.000		1.000	
10				5		0.980		0.900		1.000	
50				5		0.980		0.900		1.000	
100				5		0.980		0.900		1.000	
96h Proportion Survived Detail											
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4	
										Rep 5	
0		D		1.000		1.000		1.000		1.000	
1				1.000		1.000		1.000		1.000	
10				1.000		1.000		1.000		0.900	
50				1.000		0.900		1.000		1.000	
100				1.000		0.900		1.000		1.000	

PREPARATION of DILUTIONS

STUDY: 29523

CLIENT: AECOM

DILUENT: CLDS (Reference Water)

SPECIES: *A. bahia* and *M. beryllina*

TEST: Suspended Particulate Phase (SPP)

Diluent: CLDS	Composite #: 5		Composite #: 6		Composite #: 7		Composite #: 8	
Concentration	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)
Lab	0	2000	0	2000	0	2000	0	2000
CLDS	0	↓	0	↓	0	↓	0	↓
1 %	20	↓	20	↓	20	↓	20	↓
10 %	200	↓	200	↓	200	↓	200	↓
50 %	1000	↓	1000	↓	1000	↓	1000	↓
100 %	2000	↓	2000	↓	2000	↓	2000	↓
Initial	AK		AK		AK		AK	
Date	8/23/17		8/23/17		8/23/17		8/23/17	
Time	1420		1500		1550		1530	
	Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)	
Initial Salinity (ppt)	26.7		26.4		26.7		26.2	
Vol of Elutriate (mL)	5350		4820		5810 4610 CFS 08/23		5780	
Grams of Salt (g)	20		20		18 ²³ CFS 08/23		25	
Lot number of Salt	A-4682		A-4682		A-4682		A-4682	
Final Salinity	30.1		30.3		30.0		30.0	
Date & Initial	08/23/17 CFS		08/23/17 CFS		08/23/17 CFS		08/23/17 CFS	
Ammonia pulled on 100% SPP and Controls	Start	End (Ab) -112 EOM 8/28	Start	End (Ab) -113 EOM 8/28	Start	End (Ab) -114 EOM 8/28	Start	End (Ab) -115 EOM 8/28
		End (Mb) -118 KBS 8/27		End (Mb) -119		End (Mb) -120		End (Mb) -121

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: |

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Controls

Diluent: CLDS

SURVIVAL - Controls

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
LAB control water)	A	10	10	10	10	10	10	10	CLDS (Reference Water)	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
Initials		AK	MS	CFS	MS	UB	GRS	MS	Comments:								
Date		8/23/17	8/23/17	8/23	8/24/17	8/25	8/26/17	8/27/17									
Time		1625	1725	1800	1535	1515	1450	1540									

Notes

Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
LAB	A	7.7	7.1	5.8	6.4	7.0	8.11	8.05	7.82	7.88	7.93	21	20	20	20	20	30	30	30	30	30	NA				
CLDS	A	8.4	7.2	5.7	6.7	7.0	7.87	7.98	7.81	7.86	7.96	21	20	20	20	20	28	28	29	29	30	NA				
Initials		AK	AK	UB	CFS	DD		RECORD OF METERS USED									Water Quality Station #1					Water Quality Station #2				
Date		8/23/17	8/24/17	8/25	08/26	08/27		Exposure (Hours)									DO Meter #		24	DO Meter #						
Time		1620	1400	1440	1210	1300						0	24	48	72	96	DO Probe #		95	DO Probe #						
Incub. Temp		25	20	20	20	20		Water Quality Station #				1	1	1	1	1	pH Meter #		1097	pH Meter #						
FEEDING: Artemia nauplii (A - 4729)						Thermometer or Probe #				YS130D	YS130D	YS130D	YS130D	YS130D	pH Probe #		147	pH Probe #								
Fed By:		MS	AK	UB	CFS			Initial				AK 8/23/17	AK	UB	CFS	DD	Salinity Meter #		YS130D	Salinity Meter #						

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03AbAR082217

Sample: Composite 5

Diluent: CLDS

SURVIVAL - Composite # 5

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	9	9
	B	10	10	10	10	10	9	9		B	10	10	10	10	10	9	9
	C	10	10	10	10	10	10	10		C	10	10	10	10	9	9	9
	D	10	10	10	10	10	10	10		D	10	10	10	10	9	6	6
	E	10	10	10	10	10	9	9		E	10	10	10	10	10	8	7

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	K MS CFS MS LB GRS MS	Comments:
Date	8/23/17 8/23/17 8/23 8/24 8/25 8/25/17 8/27/17	
Time	1645 1730 1800 1540 1515 1450 1545	

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.6	7.0	5.8	6.0	7.0	7.85	7.93	7.86	7.82	7.86	21	19	20	20	20	28	28	28	28	29	NA	NA			
10 %	A	8.6	7.3	5.8	6.1	7.0	7.91	8.06	7.97	7.93	8.01	21	19	20	20	20	28	29	29	29	30	NA	NA			
50 %	A	8.2	7.4	5.8	6.1	7.0	7.93	8.07	8.09	8.11	8.14	21	19	20	20	20	29	29	29	30	31	NA	NA			
100 %	A	7.2	7.2	5.6	6.0	6.6	7.89	8.07	8.13	8.17	8.19	21	19	20	20	20	30	30	31	31	31	NA	NA			

Initials	AK AK LB CFS DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17 8/24/17 8/25 8/26 8/27											Exposure (Hours)					DO Meter #				
Time	1635 1525 1440 1210 1300											DO Probe #					DO Meter #				
Incub. Temp	25 20 20 20 20											pH Meter #					DO Probe #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)												pH Probe #					pH Meter #				
Fed By:	MS AK LB CFS DD											Salinity Meter #					pH Probe #				
												Salinity Meter #					Salinity Meter #				

(E10) Incubator temperature adjusted to 20°C after daily temperatures were recorded. At 8/23/17 New Haven Harbor FNP Tier III Sediment Evaluation. Suspended Particulate Phase Evaluation. US ACE New England District. ESI Study 29523. August 2017.

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 6

Diluent: CLDS

SURVIVAL - Composite # 6

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	9
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	9
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	8	5	0	—
	B	10	10	10	10	10	10	10		B	10	10	10	6	2	0	—
	C	10	10	10	10	10	10	10		C	10	10	10	7	2	0	—
	D	10	10	10	10	10	10	10		D	10	10	10	10	4	0	—
	E	10	10	10	10	10	10	10		E	10	10	10	8	0	—	—

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials: AK AK MS LB GRS MS

Date: 8/23/17 8/23/17 8/23/17 8/24/17 8/25 8/26/17 8/27/17

Time: 1645 1725 1805 1530 1515 1455 1550

Comments:

(E10) Mysid appear to be lethargic and lacking mobility. AK 8/23/17

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.0	7.4	6.6	6.2	6.9	7.88	8.01	8.03	7.95	7.98	21	20	20	20	20	28	28	28	28	29	28	NA			
10 %	A	8.0	7.4	6.5	6.3	6.9	7.93	8.02	8.02	7.95	8.02	21	20	20	20	20	28	28	29	29	29	NA				
50 %	A	7.8	7.3	6.2	6.4	6.9	7.91	8.04	8.09	8.06	8.12	21	19	20	20	20	28	29	30	30	30	NA				
100 %	A	6.7	7.1	6.1	6.4	/	7.88	8.06	8.13	8.09	/	21	20	20	20	/	30	30	30	31	/	NA				
Initials		AK	AK	LB	CFS	DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date		8/23/17	8/24/17	8/25	08/26	08/27	Exposure (Hours)										DO Meter #					DO Meter #				
Time		1645	1500	1440	1210	1300											DO Probe #					DO Probe #				
Incub. Temp		25	20	20	20	20	Water Quality Station #										pH Meter #					pH Meter #				
							Thermometer or Probe #										pH Probe #					pH Probe #				
FEEDING: Artemia nauplii (A-4729)							Initial										Salinity Meter #					Salinity Meter #				
Fed By:		MS	MS	LB	CFS	/																				

(E10) Incubator temperature adjusted to 20°C after daily temperature measurements. AK 8/23/17

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *A. bahia*

Lot ID: 03Ab ARO 082217

Sample: Composite 7

Diluent: CLDS

SURVIVAL - Composite # 7

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	9	8	8		C	10	10	10	10	10	8	8
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	9	5
	E	10	10	10	10	10	10	10		E	10	10	10	9	9	7	7
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	0		
	B	10	10	10	10	10	10	10		B	10	10	10	5	0		
	C	10	10	10	10	10	10	10		C	10	10	10	6	0		
	D	10	10	10	10	10	10	10		D	10	10	10	6	0		
	E	10	10	10	10	10	10	10		E	10	10	10	7	0		
Initials		W	LB	CFS	MW	LB	GRS	KB	Comments: (E10) Mysid appear to be lethargic and lacking mobility. AK 8/23/17								
Date		8/23/17	8/23/17	8/23	8/24	8/25	8/26/17	8/27									
Time		1645	1735	1800	1605	1515	1450	1445									

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.9	7.4	6.1	6.4	6.9	7.87	8.01	7.95	7.95	7.97	20	19	20	20	20	28	28	28	29	29	NA	NA			
10 %	A	8.0	7.4	6.2	6.3	6.8	7.90	8.02	7.97	7.95	7.96	20	19	20	20	20	28	29	29	29	29	NA	NA			
50 %	A	8.0	7.5	6.2	6.2	6.3	7.92	8.02	8.11	8.00	8.07	20	20	20	20	20	29	29	29	29	30	NA	NA			
100 %	A	6.8	7.4	6.2			7.92	8.04	8.14			21	20	20			30	30	30			NA	NA			
Initials		AK	AK	LB	CFS	DD		RECORD OF METERS USED									Water Quality Station #1					Water Quality Station #2				
Date		8/23/17	8/24/17	8/25	08/26	08/27		Exposure (Hours)									DO Meter #		24	DO Meter #						
Time		1705	1530	1440	1210	1300							0	24	48	72	96	DO Probe #		95	DO Probe #					
Incub. Temp		25	20	20	20	20		Water Quality Station #		1	1	1	1	1	pH Meter #		1097	pH Meter #								
FEEDING: Artemia nauplii (A - 4729)						Thermometer or Probe #		YS130D	YS130D	YS130D	YS130D	YS130D	pH Probe #		147	pH Probe #										
Fed By:		MS	MW	LB	CFS			Initial		AK	AK	LB	CFS	DD	Salinity Meter #		YS130D	Salinity Meter #								

(E10) Incubator temperature adjusted to 20°C after daily temperatures were recorded. AK 8/23/17

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: }

Test Species: *A. bahia*

Lot ID: 03ABAR0082217

Sample: Composite 8

Diluent: CLDS

SURVIVAL - Composite # 8

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	9 ^{60 LB} _{5/25}	9	9		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	9	9	9
	D	10	10	10	10	9 ^{60 LB} _{5/25}	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	9	9		E	10	10	10	10	10	10	9
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	9	5
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	9	2
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	8	3
	D	10	10	10	10	10	10	10		D	10	10	10	10	9 ^{60 LB} _{5/25}	4	2
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	8	5

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	AK CFS MS LB BG MS	Comments:
Date	8/23/17 8/23/17 08/23 08/24 8/25 08/26/17 08/27/17	(E10) 8/25/17 mysid unaccounted for
Time	1645 1730 1800 1615 1515 1450 1600	

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.2	7.2	6.4	6.2	6.8	7.87	7.98	8.02	8.03	7.97	21	20	20	20	20	28	28	28	28	29	NA	NA			
10 %	A	8.2	7.1	6.6	6.7	6.7	7.91	8.02	8.05	8.06	8.01	21	20	20	20	20	28	28	28	29	29	NA	NA			
50 %	A	7.8	7.2	6.7	6.7	6.7	7.95	8.07	8.13	8.15	8.10	21	20	20	20	20	29	29	29	29	30	NA	NA			
100 %	A	6.9	7.0	6.8	6.8	6.8	7.94	8.10	8.16	8.19	8.15	21	20	20	20	20	30	30	30	31	31	NA	NA			

Initials	AK AK LB CFS DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17 8/24/17 8/25 08/26 08/27	Exposure (Hours)										DO Meter #					DO Meter #				
Time	1715 1445 1440 1210 1300											DO Probe #					DO Probe #				
Incub. Temp	25 ⁴⁰ 20 20 20 20											pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)												pH Probe #					pH Probe #				
Fed By:	MS MS LB BG											Salinity Meter #					Salinity Meter #				

(E10) Incubator temperature adjusted to 20°C after daily temperatures were recorded. AK 8/23/17
 New Haven Harbor FNP Tier III Sediment Evaluation. Suspended Particulate Phase Evaluation.
 US ACE New England District. ESI Study 29523. August 2017.



03AB ARO 082217

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species AMERICAMYSIS bahia

Source: Lab reared _____ Hatchery reared _____ Field collected _____

Hatch date 8-19-17 Receipt date _____Lot number 081917MS Strain _____Brood origination FLORIDA

II. Water Quality

Temperature 25 °C Salinity ~28 ppt D.O. _____ ppmpH 7.8 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater ☒ Other _____Recirculating ☒ Flow through _____ Static renewal _____DIET: Flake food ☒ Phytoplankton _____ Trout chow _____Artemia ☒ Rotifers _____ YCT _____ Other ENCAP SHRIMP DIET

Prophylactic treatments: _____

Comments: _____

IV. Shipping Information

Client: EST # of Organisms 1800+Carrier: _____ Date shipped 8-22-17Biologist: Mark DominguezPO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

CETIS Test Data Worksheet

Report Date: 29 Aug-17 16:23 (p 1 of 1)
Test Code/ID: 18-6053-3814/29523-5Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 16:45		Species: Americamysis bahia			Sample Code: 29521-010				
End Date: 27 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 5				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	29	10				10	
0	D	2	14	10				10	
0	D	3	17	10				10	
0	D	4	12	10				10	
0	D	5	26	10				10	
0	L	1	7	10				10	
0	L	2	4	10				10	
0	L	3	9	10				10	
0	L	4	30	10				10	
0	L	5	20	10				10	
1		1	6	10				10	
1		2	11	10				10	
1		3	23	10				10	
1		4	16	10				10	
1		5	21	10				10	
10		1	5	10				10	
10		2	2	10				9	
10		3	27	10				10	
10		4	19	10				10	
10		5	3	10				10	
50		1	28	10				10	
50		2	8	10				10	
50		3	18	10				10	
50		4	13	10				10	
50		5	1	10				10	
100		1	24	10				9	
100		2	15	10				9	
100		3	10	10				9	
100		4	22	10				6	
100		5	25	10				7	

CETIS Summary Report

Report Date: 29 Aug-17 17:05 (p 1 of 1)
Test Code: 29523-5Ab | 18-6053-3814

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	11-6984-8376		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 16:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 15:40		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	00-1005-1229		Code:	29521-010			Client:	AECOM			
Sample Date:	23 Aug-17 10:20		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 10:20		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 5							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
00-5269-8559	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
09-2444-4660	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
00-5269-8559	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
09-2444-4660	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	0.800	0.624	0.976	0.600	0.900	0.063	0.141	17.68%	20.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	0.900	1.000	1.000	0.900					
50		1.000	1.000	1.000	1.000	1.000					
100		0.900	0.900	0.900	0.600	0.700					

CETIS Analytical Report

Report Date: 29 Aug-17 17:05 (p 1 of 2)
Test Code: 29523-5Ab | 18-6053-3814

Americamysis 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 00-5269-8559		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:05		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 11-6984-8376		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 23 Aug-17 16:45		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 27 Aug-17 15:40		Species: Americamysis bahia		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: <5							
Sample ID: 00-1005-1229		Code: 29521-010		Client: AECOM							
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 10:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 5									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL	Method				
Log(X+1)		Linear		979844	200	Yes	Two-Point Interpolation				
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.99	2.82	0.0220	Outlier Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.98	2.0%
50		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.98	2.0%
100		5	0.800	0.600	0.900	0.141	17.70%	20.0%	40/50	0.8	20.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	0.900	1.000	1.000	0.900					
50		1.000	1.000	1.000	1.000	1.000					
100		0.900	0.900	0.900	0.600	0.700					

CETIS Analytical Report

Report Date: 29 Aug-17 17:05 (p 2 of 2)
Test Code: 29523-5Ab | 18-6053-3814

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 09-2444-4660		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 29 Aug-17 17:05		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Batch ID: 11-6984-8376		Test Type: Survival (96h)		Analyst: Amanda Komarek								
Start Date: 23 Aug-17 16:45		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site								
Ending Date: 27 Aug-17 15:40		Species: Americamysis bahia		Brine: Generic commercial salts								
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: <5								
Sample ID: 00-1005-1229		Code: 29521-010		Client: AECOM								
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 23 Aug-17 10:20		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 6h		Station: Composite 5										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method				
Log(X+1)		Linear		1311594	200	Yes		Two-Point Interpolation				
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL		95% UCL					
EC50	>100	n/a	n/a	<1	n/a		n/a					
96h Proportion Survived Summary												
			Calculated Variate(A/B)								Isotonic Variate	
Conc-%		Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0		D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10			5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.98	2.0%
50			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.98	2.0%
100			4	0.850	0.700	0.900	0.100	11.80%	15.0%	34/40	0.85	15.0%
96h Proportion Survived Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	1.000	1.000	1.000	1.000	1.000					
1			1.000	1.000	1.000	1.000	1.000					
10			1.000	0.900	1.000	1.000	0.900					
50			1.000	1.000	1.000	1.000	1.000					
100			0.900	0.900	0.900	Outlier	0.700					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 16:43 (p 1 of 1)
Test Code/ID: 13-7846-4617/29523-6Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 16:45		Species: Americamysis bahia			Sample Code: 29521-012				
End Date: 27 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 6				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	14	10		10	10	10	
0	D	2	10	10		10	10	10	
0	D	3	28	10		10	10	10	
0	D	4	18	10		10	10	10	
0	D	5	27	10		10	10	10	
0	L	1	30	10		10	10	10	
0	L	2	17	10		10	10	10	
0	L	3	4	10		10	10	10	
0	L	4	21	10		10	10	10	
0	L	5	1	10		10	10	10	
1		1	26	10		10	10	10	
1		2	15	10		10	10	10	
1		3	2	10		10	10	10	
1		4	25	10		10	10	10	
1		5	6	10		10	10	10	
10		1	11	10		10	10	10	
10		2	12	10		10	10	10	
10		3	5	10		10	10	10	
10		4	8	10		10	10	10	
10		5	3	10		10	10	10	
50		1	9	10		10	10	10	
50		2	24	10		10	10	10	
50		3	19	10		10	10	10	
50		4	23	10		10	10	9	
50		5	20	10		10	10	9	
100		1	22	10		5	0	0	
100		2	29	10		2	0	0	
100		3	13	10		2	0	0	
100		4	16	10		4	0	0	
100		5	7	10		0	0	0	

CETIS Summary Report

Report Date: 01 Sep-17 14:18 (p 1 of 1)
Test Code: 29523-6Ab | 13-7846-4617

Americamysis 96-h Acute Survival Test								EnviroSystems, Inc.			
Batch ID:	11-6984-8376		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 16:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 15:40		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	16-0192-7624		Code:	29521-012			Client:	AECOM			
Sample Date:	23 Aug-17 11:00		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 11:00		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 6							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
00-6395-4281	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	69.8	68.1	71.3	1.434	
07-5108-4435	96h Proportion Survived		Spearman-Kärber			EC50	67.5	63.4	72	1.481	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
00-6395-4281	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
07-5108-4435	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	0.900	0.900					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:18 (p 1 of 1)
Test Code: 29523-6Ab | 13-7846-4617

Americamysis 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 07-5108-4435		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:07		Analysis: Untrimmed Spearman-Kärber		Official Results: Yes							
Sample ID: 16-0192-7624		Code: 29521-012		Client: AECOM							
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 11:00		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 6									
Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	0.00%	1.83	0.0139	67.5	63.4	72			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.68	2.82	0.0918	No Outliers Detected				
96h Proportion Survived Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
50		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.96	4.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	0.900	0.900					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:18 (p 1 of 1)
Test Code: 29523-6Ab | 13-7846-4617

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 00-6395-4281		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:07		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 16-0192-7624		Code: 29521-012		Client: AECOM							
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 11:00		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 6									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	613243	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.68	2.82	0.0918	No Outliers Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	69.8	68.1	71.3	1.434	1.403	1.468					
96h Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
50		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.96	4.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	0.900	0.900					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 16:43 (p 1 of 1)
Test Code/ID: 18-3142-4760/29523-7Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 16:45		Species: Americamysis bahia			Sample Code: 29521-014				
End Date: 27 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 7				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	23	10	10	10	10	10	
0	D	2	28	10	10	10	10	10	
0	D	3	10	10	10	10	10	10	
0	D	4	20	10	10	10	10	10	
0	D	5	5	10	10	10	10	10	
0	L	1	29	10	10	10	10	10	
0	L	2	4	10	10	10	10	10	
0	L	3	18	10	10	10	10	10	
0	L	4	1	10	10	10	10	10	
0	L	5	15	10	10	10	10	10	
1		1	27	10	10	10	10	10	
1		2	16	10	10	10	10	10	
1		3	11	10	10	9	8	8	
1		4	19	10	10	10	10	10	
1		5	24	10	10	10	10	10	
10		1	26	10	10	10	10	10	
10		2	6	10	10	10	10	10	
10		3	3	10	10	10	10	10	
10		4	30	10	10	10	10	10	
10		5	9	10	10	10	10	10	
50		1	13	10	10	10	10	10	
50		2	12	10	10	10	10	10	
50		3	21	10	10	10	8	8	
50		4	7	10	10	10	9	5	
50		5	14	10	9	9	7	7	
100		1	25	10	10	0	0	0	
100		2	22	10	5	0	0	0	
100		3	8	10	6	0	0	0	
100		4	17	10	6	0	0	0	
100		5	2	10	7	0	0	0	

CETIS Summary Report

Report Date: 01 Sep-17 14:20 (p 1 of 1)
Test Code: 29523-7Ab | 18-3142-4760

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	11-6984-8376		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 16:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 15:40		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	14-8125-5183		Code:	29521-014			Client:	AECOM			
Sample Date:	23 Aug-17 09:20		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 09:20		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	7h		Station:	Composite 7							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
01-9121-1494	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	64.9	54.9	71.4	1.541	✓
06-7922-8296	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	67.4	60.9	72	1.485	
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
01-9121-1494	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
06-7922-8296	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	4.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	0.800	0.537	1.000	0.500	1.000	0.095	0.212	26.52%	20.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	0.800	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	0.800	0.500	0.700					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:20 (p 1 of 2)
Test Code: 29523-7Ab | 18-3142-4760

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 01-9121-1494		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 29 Aug-17 17:18		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Sample ID: 14-8125-5183		Code: 29521-014		Client: AECOM								
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 7h		Station: Composite 7										
Linear Interpolation Options												
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method							
Log(X+1)	Linear	1185141	200	Yes	Two-Point Interpolation							
Residual Analysis												
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value		Grubbs Extreme Value Test		2.86	2.82	0.0412	Outlier Detected					
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	64.9	54.9	71.4	1.541	1.401	1.822						
96h Proportion Survived Summary												
				Calculated Variate(A/B)						Isotonic Variate		
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect	
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
1		5	0.960	0.800	1.000	0.089	9.32%	4.0%	48/50	0.98	2.0%	
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.98	2.0%	
50		5	0.800	0.500	1.000	0.212	26.50%	20.0%	40/50	0.8	20.0%	
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%	
96h Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	1.000	1.000	1.000	1.000	1.000						
1		1.000	1.000	0.800	1.000	1.000						
10		1.000	1.000	1.000	1.000	1.000						
50		1.000	1.000	0.800	0.500	0.700						
100		0.000	0.000	0.000	0.000	0.000						

CETIS Analytical Report

Report Date: 01 Sep-17 14:20 (p 2 of 2)
Test Code: 29523-7Ab | 18-3142-4760

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Analysis ID: 06-7922-8296		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:18		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 14-8125-5183		Code: 29521-014		Client: AECOM							
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 7h		Station: Composite 7									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1388723	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	67.4	60.9	72	1.485	1.389	1.642					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.960	0.800	1.000	0.089	9.32%	4.0%	48/50	0.98	2.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.98	2.0%
50		4	0.875	0.700	1.000	0.150	17.10%	12.5%	35/40	0.875	12.5%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	0.800	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	0.800	Outlier	0.700					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 16:06 (p 1 of 1)
Test Code/ID: 14-0376-5950/29523-8Ab

Americamysis 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 16:45		Species: Americamysis bahia			Sample Code: 29521-016				
End Date: 27 Aug-17 15:40		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 12:23		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 8				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	15	10				10	
0	D	2	8	10				10	
0	D	3	19	10				10	
0	D	4	16	10				10	
0	D	5	11	10				10	
0	L	1	10	10				10	
0	L	2	18	10				10	
0	L	3	2	10				10	
0	L	4	22	10				10	
0	L	5	1	10				10	
1		1	28	10				10	
1		2	29	10				9	
1		3	17	10				10	
1		4	24	10				10	
1		5	23	10				9	
10		1	6	10				10	
10		2	26	10				10	
10		3	20	10				10	
10		4	5	10				10	
10		5	4	10				10	
50		1	7	10				10	
50		2	14	10				10	
50		3	9	10				9	
50		4	27	10				10	
50		5	21	10				9	
100		1	3	10				5	
100		2	25	10				2	
100		3	13	10				3	
100		4	30	10				2	
100		5	12	10				5	

CETIS Summary Report

Report Date: 29 Aug-17 17:22 (p 1 of 1)
Test Code: 29523-8Ab | 14-0376-5950

Americamysis 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	11-6984-8376		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 16:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 15:40		Species:	Americamysis bahia			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	<5			
Sample ID:	01-3889-4880		Code:	29521-016			Client:	AECOM			
Sample Date:	23 Aug-17 12:23		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 12:23		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	4h		Station:	Composite 8							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
11-7782-7967	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	83.7	74.2	100	1.195	
15-5443-2768	96h Proportion Survived		Trimmed Spearman-Kärber			EC50	83.6	74.7	93.6	1.196	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
11-7782-7967	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
15-5443-2768	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
100		5	0.340	0.152	0.528	0.200	0.500	0.068	0.152	44.61%	66.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	1.000	1.000	0.900					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	0.900	1.000	0.900					
100		0.500	0.200	0.300	0.200	0.500					

CETIS Analytical Report

Report Date: 29 Aug-17 17:22 (p 1 of 1)
Test Code: 29523-8Ab | 14-0376-5950

Americamysis 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 15-5443-2768		Endpoint: 96h Proportion Survived				CETIS Version: CETISv1.9.3		Official Results: Yes			
Analyzed: 29 Aug-17 17:21		Analysis: Trimmed Spearman-Kärber									
Batch ID: 11-6984-8376		Test Type: Survival (96h)				Analyst: Amanda Komarek					
Start Date: 23 Aug-17 16:45		Protocol: EPA/821/R-02-012 (2002)				Diluent: CLIS Reference Site					
Ending Date: 27 Aug-17 15:40		Species: Americamysis bahia				Brine: Generic commercial salts					
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH				Age: <5					
Sample ID: 01-3889-4880		Code: 29521-016				Client: AECOM					
Sample Date: 23 Aug-17 12:23		Material: Dredged Sediment Suspended Particulate				Project: Dredged Sediment Evaluation					
Receipt Date: 23 Aug-17 12:23		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 4h		Station: Composite 8									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	34.00%	1.92	0.0244	83.6	74.7	93.6			
Residual Analysis											
Attribute	Method			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.02	2.82	0.8924	No Outliers Detected				
96h Proportion Survived Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.98	2.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.98	2.0%
50		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.96	4.0%
100		5	0.340	0.200	0.500	0.152	44.60%	66.0%	17/50	0.34	66.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	1.000	1.000	0.900					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	0.900	1.000	0.900					
100		0.500	0.200	0.300	0.200	0.500					

CETIS Analytical Report

Report Date: 29 Aug-17 17:21 (p 1 of 1)
Test Code: 29523-8Ab | 14-0376-5950

Americamysis 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 11-7782-7967		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 17:21		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 11-6984-8376		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 23 Aug-17 16:45		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 27 Aug-17 15:40		Species: Americamysis bahia		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: <5							
Sample ID: 01-3889-4880		Code: 29521-016		Client: AECOM							
Sample Date: 23 Aug-17 12:23		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 12:23		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 4h		Station: Composite 8									
Linear Interpolation Options											
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method	
Log(X+1)		Linear		965885		200		Yes		Two-Point Interpolation	
Residual Analysis											
Attribute		Method		Test Stat		Critical		P-Value		Decision(α:5%)	
Extreme Value		Grubbs Extreme Value Test		2.02		2.82		0.8924		No Outliers Detected	
Point Estimates											
Level		%		95% LCL		95% UCL		TU		95% LCL 95% UCL	
EC50		83.7		74.2		100		1.195		0.999 1.348	
96h Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%		Code		Count		Mean		Min		Max	
Std Dev		CV%		%Effect		A/B		Mean		%Effect	
0		D		5		1.000		1.000		1.000	
1				5		0.960		0.900		1.000	
10				5		1.000		1.000		1.000	
50				5		0.960		0.900		1.000	
100				5		0.340		0.200		0.500	
96h Proportion Survived Detail											
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4	
Rep 5											
0		D		1.000		1.000		1.000		1.000	
1				1.000		0.900		1.000		0.900	
10				1.000		1.000		1.000		1.000	
50				1.000		1.000		0.900		1.000	
100				0.500		0.200		0.300		0.200	

PREPARATION of DILUTIONS

STUDY: 29523

CLIENT: AECOM

DILUENT: CLDS (Reference Water)

SPECIES: *M. beryllina* + *A. punctulata*

TEST: Suspended Particulate Phase (SPP)

Diluent: CLDS	Composite #: 1		Composite #: 2		Composite #: 3		Composite #: 4	
Concentration	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)
Lab	0	2000	0	2000	0	2000	0	2000
CLDS	0	↓	0	↓	0	↓	0	↓
1 %	20	↓	20	↓	20	↓	20	↓
10 %	200	↓	200	↓	200	↓	200	↓
50 %	1000	↓	1000	↓	1000	↓	1000	↓
100 %	2000	↓	2000	↓	2000	↓	2000	↓
Initial	K		K		K		K	
Date	8/25/17		8/25/17		8/25/17		8/25/17	
Time	1430		1430		1430		1430	
	Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)		Salinity Adjustment Record (if necessary)	
Initial Salinity (ppt)	27.2		26.9		26.94		26.1	
Vol of Elutriate (mL)	3700		3320		4000-3320		4000	
Grams of Salt (g)	12 (A-4682)		12		12.7		18	
Lot number of Salt	A-4682		A-4682		A-4682		A-4682	
Final Salinity	29.8		30.0		30.01		29.7	
Date & Initial	8/25/17 K		08/25/17 CFS		08/25/17 K		08/25/17	
Ammonia pulled on 100% SPP and Controls	Start 29523 -100	End (Ab) 130 -106 AP End (Mb) -124	Start 29523 -101	End (Ab) 131 -107 AP End (Mb) -125	Start 29523 -102 102 End (Mb) -126	End (Ab) 132 -108 AP End (Mb) -126	Start 29523 -103	End (Ab) 133 -109 AP End (Mb) -127

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MBAR0082417

Sample: Controls

Diluent: CLDS

SURVIVAL - Controls

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
LAB control water)	A	10	10	10	10	10	10	10	CLDS (Reference Water)	A	10	10	10	10	10	9	8
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
Initials		BG	CFS	AK	CFS	MS	KB	LB	Comments:								
Date		08/25/17	08/25/17	8/25/17	08/26	08/27	08/28	8/29									
Time		1620	1655	1715	1420	1455	1535	1500									

Notes

Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
LAB	A	7.4	7.0	6.8	7.2	6.4	8.07	7.99	7.92	7.95	7.86	21	21	20	20	21	30	28	30	30	32					
CLDS	A	7.9	6.8	6.9	7.1	6.4	7.87	7.96	7.92	7.97	7.87	21	19	20	19	21	28	29	29	30	31					
Initials		W	CFS	DD	KB	MS		RECORD OF METERS USED								Water Quality Station #1					Water Quality Station #2					
Date		8/25/17	08/26	08/27	08/28	08/29		Exposure (Hours)								DO Meter # 24					DO Meter #					
Time		1600	1135	1150	1510	1529										DO Probe # 28 8/25 24 95					DO Probe #					
Incub. Temp		20	20	20	20	20		Water Quality Station # 1 1 1 1 1								pH Meter # 1097					pH Meter #					
FEEDING: Artemia nauplii (A-4724)								Thermometer or Probe # Y55300 Y51300 Y51300 Y51300 Y51300								pH Probe # 147					pH Probe #					
Fed By:		AK	CFS	MS	KB			Initial W CFS DD KB MS								Salinity Meter # Y55300					Salinity Meter #					

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MBAR0082417

Sample: Composite

Diluent: CLDS

SURVIVAL - Composite # 1

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	9		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	9	9	9	9
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials: *[Handwritten initials]*
 Date: 8/25/17
 Time: 1600

Comments:

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.5	7.4	7.0	7.6	5.9	7.87	8.00	7.99	7.89	7.80	21	19	20	21	21	28	28	28	29	30					
10 %	A	7.6	7.2	7.1	7.6	6.1	7.89	8.03	7.93	7.96	7.82	21	19	20	21	21	28	28	28	29	30					
50 %	A	7.6	7.2	7.0	7.5	6.3	7.99	8.07	8.03	8.00	7.91	21	19	20	21	21	29	29	29	30	31					
100 %	A	7.5	7.2	6.9	7.4	6.4	8.07	8.09	8.04	8.04	7.94	21	19	20	21	21	30	30	30	31	32					

Initials: *[Handwritten initials]*
 Date: 8/25/17
 Time: 1600
 Incub. Temp: 20
 FEEDING: *Artemia nauplii* (A-4729)
 Fed By: *[Handwritten initials]*

RECORD OF METERS USED

Exposure (Hours)					
	0	24	48	72	96
Water Quality Station #	1	1	1	1	1
Thermometer or Probe #	YS300	YS300	YS300	YS300	YS300
Initial	<i>[Handwritten initials]</i>	<i>[Handwritten initials]</i>	<i>[Handwritten initials]</i>	<i>[Handwritten initials]</i>	<i>[Handwritten initials]</i>

Water Quality Station #1

DO Meter # 24
 DO Probe # 95
 pH Meter # *[Handwritten]*
 pH Probe # 147
 Salinity Meter # *[Handwritten]*

Water Quality Station #2

DO Meter #
 DO Probe #
 pH Meter #
 pH Probe #
 Salinity Meter #

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MBAR0082417

Sample: Composite 2

Diluent: CLDS

SURVIVAL - Composite # 2

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	9	9	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	8	8
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	9	9	9

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	BC CFS AK CFS MS KB LB
Date	08/25/17 08/25 8/25/17 08/26 08/27 08/28 8/29
Time	1620 1710 1725 1420 1510 1535 1500

Comments:

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.7	6.6	6.7	7.1	6.1	7.88	8.07	7.89	7.92	7.82	21	19	20	20	21	28	28	28	28	30					
10 %	A	7.8	6.7	6.8	7.1	6.1	7.92	8.02	7.93	7.96	7.88	21	19	20	20	21	28	28	29	29	30					
50 %	A	7.8	6.7	6.8	7.1	6.1	8.01	8.05	8.03	8.05	8.02	21	19	20	20	21	29	29	29	30	30					
100 %	A	6.8	6.7	6.8	7.1	6.0	8.03	8.08	8.11	8.10	8.15	21	19	20	20	21	30	30	30	31	32					
Initials	W CFS DD KB MS	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2									
Date	8/25/17 08/26 08/27 08/28 8/29	Exposure (Hours)										DO Meter #					DO Meter #									
Time	1600 1135 1155 1510 1529											DO Probe #					DO Probe #									
Incub. Temp	20 20 20 20 20											pH Meter #					pH Meter #									
FEEDING: <i>Artemia nauplii</i> (A-4729)												pH Probe #					pH Probe #									
Fed By:	AK CFS MS KB											Salinity Meter #					Salinity Meter #									

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MBAR0082417

Sample: Composite 3

Diluent: CLDS

SURVIVAL - Composite # 3

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	TSB CFS AK CFS MS KB UB
Date	08/25/17 08/25 8/25/17 08/26 08/27 08/28 8/29
Time	1620 1720 1735 1420 1525 1535 1500

Comments:

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.7	6.7	7.0	7.4	6.1	7.86	7.90	7.89	7.92	7.87	21	20	20	20	21	28	28	28	28	29					
10 %	A	7.6	6.8	7.0	7.3	6.2	7.88	7.90	7.90	7.89	7.90	21	20	20	20	21	28	28	29	29	30					
50 %	A	7.5	6.9	7.0	7.1	6.3	7.94	8.00	8.01	7.96	7.97	20	20	20	20	21	29	29	29	30	31					
100 %	A	6.5	6.9	7.0	6.9	6.2	7.96	8.02	8.05	8.07	8.05	21	20	20	20	21	30	30	31	31	32					

Initials	W CFS DD KB MS
Date	8/25/17 08/26 08/27 08/28 08/29
Time	1600 1135 1155 1510 1529
Incub. Temp	20 20 20 20 20

FEEDING: *Artemia nauplii* (A-4729)

Fed By:	AK CFS MS KB
---------	--------------

RECORD OF METERS USED

Exposure (Hours)					
	0	24	48	72	96
Water Quality Station #	1	1	1	1	1
Thermometer or Probe #	YS300	YS300	YS300	YS300	YS300
Initial	W	CFS	DD	KB	MS

Water Quality Station #1

DO Meter #	24
DO Probe #	95
pH Meter #	1047
pH Probe #	147
Salinity Meter #	YS530D

Water Quality Station #2

DO Meter #	
DO Probe #	
pH Meter #	
pH Probe #	
Salinity Meter #	

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09M6AR0062417

Sample: Composite 4

Diluent: CLDS

SURVIVAL - Composite # 4

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	9	9	9	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	9		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	10	10	10	10
Initials		BG	CFS	AK	CFS	MS	KB	LB	Comments:								
Date		8/15/17	8/15/17	8/15/17	8/15/17	8/15/17	8/15/17	8/15/17									
Time		1620	1730	1745	1420	1530	1535	1500									

ED 8/27 organism missing

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.2	7.4	6.9	7.4	6.7	7.88	7.90	7.91	7.91	7.90	21	21	20	20	21	28	28	28	28	30					
10 %	A	7.6	7.2	6.9	7.2	6.5	7.90	7.90	7.93	7.91	7.90	21	21	20	20	21	28	28	29	29	30					
50 %	A	7.2	7.1	6.9	7.0	6.4	7.96	8.00	8.05	8.06	8.06	21	21	20	20	21	29	29	29	30	31					
100 %	A	5.5	6.9	6.9	7.0	6.3	7.99	8.02	8.12	8.13	8.15	21	21	20	20	21	30	30	30	31	31					
Initials		KB	CFS	DD	KB	MS	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date		8/25/17	8/25/17	8/25/17	8/25/17	8/25/17	Exposure (Hours)										DO Meter #					DO Meter #				
Time		1600	1135	1155	1510	1529											DO Probe #					DO Probe #				
Incub. Temp		20	20	20	20	20	Water Quality Station #										pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)							Thermometer or Probe #										pH Probe #					pH Probe #				
Fed By:		AK	CFS	MS	KB		Initial										Salinity Meter #					Salinity Meter #				



09MBAR0082417

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Menidia beryllinaSource: Lab reared ☒ Hatchery reared _____ Field collected _____Hatch date 08/15/17 Receipt date _____Lot number 08117MB Strain AROBrood origination Cape Cod, MA

II. Water Quality

Temperature 25 °C Salinity 25 ppt D.O. SAT ppmpH 8.2 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater ☒ Other _____Recirculating ☒ Flow through _____ Static renewal _____DIET: Flake food ☒ Phytoplankton _____ Trout chow _____Artemia ☒ Rotifers ☒ YCT _____ Other _____

Prophylactic treatments: _____

Comments: _____

IV. Shipping Information

Client: EST # of Organisms 1000+Carrier: PKK UP Date shipped 8/24/17

Biologist: _____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

STUDY: 29253
CLIENT: AECOM
PROJECT: New Haven
ASSAY: MB96SPP
SPECIES: *M. beryllina*
TASK: Wet Weight Data - Balance Output File
BALANCE: Ohaus Discovery Balance Model DV215CD
Serial #: 1124024313

Date / Initials: 08/25/17 LB UB

Rep

1	0.00085
2	0.00304
3	0.00458
4	0.00447
5	0.00316
6	0.00444
7	0.00194
8	0.00379
9	0.00167
10	0.00326
11	0.00472
12	0.00211
13	0.00386
14	0.00226
15	0.00177
16	0.00314
17	0.00193
18	0.00257
19	0.00206
20	0.00271

Mean Weight (g):	0.00292
Test Volume (L):	0.2
Loading Rate(g/L):	0.14583

CETIS Test Data Worksheet

Report Date: 30 Aug-17 10:00 (p 1 of 1)
Test Code/ID: 20-7647-7184/29523-1Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 25 Aug-17 16:20		Species: Menidia beryllina			Sample Code: 29521-017				
End Date: 29 Aug-17 15:00		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 1				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	2	10				8	
0	D	2	19	10				10	
0	D	3	15	10				10	
0	D	4	28	10				10	
0	D	5	23	10				10	
0	L	1	25	10				10	
0	L	2	7	10				10	
0	L	3	21	10				10	
0	L	4	30	10				10	
0	L	5	22	10				10	
1		1	13	10				10	
1		2	24	10				10	
1		3	12	10				10	
1		4	3	10				10	
1		5	10	10				10	
10		1	11	10				10	
10		2	1	10				9	
10		3	26	10				10	
10		4	16	10				10	
10		5	27	10				10	
50		1	5	10				10	
50		2	4	10				10	
50		3	9	10				10	
50		4	29	10				10	
50		5	18	10				10	
100		1	6	10				10	
100		2	8	10				10	
100		3	20	10				10	
100		4	14	10				9	
100		5	17	10				10	

CETIS Summary Report

Report Date: 30 Aug-17 10:04 (p 1 of 1)
Test Code: 29523-1Mb | 20-7647-7184

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	10-3163-0969		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:20		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	29 Aug-17 15:00		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	10			
Sample ID:	16-7813-7221		Code:	29521-017			Client:	AECOM			
Sample Date:	25 Aug-17 09:30		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 09:30		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	7h		Station:	Composite 1							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
01-2935-1650	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
14-5877-4211	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
					Lower	Upper					
01-2935-1650	96h Proportion Survived		Control Resp	0.96	0.9	>>	Yes	Passes Criteria			
14-5877-4211	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
10		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	0.900	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	0.900	1.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:03 (p 1 of 2)
Test Code: 29523-1Mb | 20-7647-7184

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 01-2935-1650		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3		Official Results: Yes						
Analyzed: 30 Aug-17 10:03		Analysis: Linear Interpolation (ICPIN)										
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek								
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site								
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts								
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10								
Sample ID: 16-7813-7221		Code: 29521-017		Client: AECOM								
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 25 Aug-17 09:30		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 7h		Station: Composite 1										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL	Method					
Log(X+1)		Linear		387419	200	Yes	Two-Point Interpolation					
Residual Analysis												
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test			3.5	2.82	9.2E-04	Outlier Detected				
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	>100	n/a	n/a	<1	n/a	n/a						
96h Proportion Survived Summary				Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect	
0	D	5	0.960	0.800	1.000	0.089	9.32%	0.0%	48/50	0.985	0.0%	
1		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.985	0.0%	
10		5	0.980	0.900	1.000	0.045	4.56%	-2.08%	49/50	0.985	0.0%	
50		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.985	0.0%	
100		5	0.980	0.900	1.000	0.045	4.56%	-2.08%	49/50	0.98	0.51%	
96h Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.800	1.000	1.000	1.000	1.000						
1		1.000	1.000	1.000	1.000	1.000						
10		1.000	0.900	1.000	1.000	1.000						
50		1.000	1.000	1.000	1.000	1.000						
100		1.000	1.000	1.000	0.900	1.000						

CETIS Analytical Report

Report Date: 30 Aug-17 10:03 (p 2 of 2)
Test Code: 29523-1Mb | 20-7647-7184

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 14-5877-4211		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 30 Aug-17 10:03		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek								
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site								
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts								
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10								
Sample ID: 16-7813-7221		Code: 29521-017		Client: AECOM								
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 25 Aug-17 09:30		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 7h		Station: Composite 1										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method				
Log(X+1)		Linear		203934	200	Yes		Two-Point Interpolation				
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL		95% UCL					
EC50	>100	n/a	n/a	<1	n/a		n/a					
96h Proportion Survived Summary												
			Calculated Variate(A/B)								Isotonic Variate	
Conc-%		Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0		D	4	1.000	1.000	1.000	0.000	0.00%	0.0%	40/40	1	0.0%
1			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10			5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.99	1.0%
50			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.99	1.0%
100			5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.98	2.0%
96h Proportion Survived Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	Outlier	1.000	1.000	1.000	1.000					
1			1.000	1.000	1.000	1.000	1.000					
10			1.000	0.900	1.000	1.000	1.000					
50			1.000	1.000	1.000	1.000	1.000					
100			1.000	1.000	1.000	0.900	1.000					

CETIS Test Data Worksheet

Report Date: 30 Aug-17 09:58 (p 1 of 1)
Test Code/ID: 09-6478-4789/29523-2Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 25 Aug-17 16:20		Species: Menidia beryllina			Sample Code: 29521-018				
End Date: 29 Aug-17 15:00		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 2				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	9	10				8	
0	D	2	2	10				10	
0	D	3	3	10				10	
0	D	4	5	10				10	
0	D	5	7	10				10	
0	L	1	15	10				10	
0	L	2	26	10				10	
0	L	3	17	10				10	
0	L	4	25	10				10	
0	L	5	18	10				10	
1		1	23	10				9	
1		2	20	10				10	
1		3	16	10				10	
1		4	28	10				10	
1		5	19	10				10	
10		1	11	10				10	
10		2	13	10				10	
10		3	30	10				10	
10		4	8	10				10	
10		5	21	10				10	
50		1	4	10				10	
50		2	14	10				10	
50		3	22	10				10	
50		4	29	10				10	
50		5	24	10				10	
100		1	1	10				10	
100		2	12	10				10	
100		3	27	10				8	
100		4	10	10				10	
100		5	6	10				9	

CETIS Summary Report

Report Date: 30 Aug-17 10:06 (p 1 of 1)
Test Code: 29523-2Mb | 09-6478-4789

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	10-3163-0969		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:20		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	29 Aug-17 15:00		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	10			
Sample ID:	13-1951-3050		Code:	29521-018			Client:	AECOM			
Sample Date:	25 Aug-17 10:35		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 10:35		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 2							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
06-9898-3546	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
11-1078-1103	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
					Lower	Upper					
06-9898-3546	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
11-1078-1103	96h Proportion Survived		Control Resp	0.96	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
100		5	0.940	0.829	1.000	0.800	1.000	0.040	0.089	9.52%	2.08%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		0.900	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	0.800	1.000	0.900					

CETIS Analytical Report

Report Date: 01 Sep-17 14:29 (p 1 of 1)
Test Code: 29523-2Mb | 09-6478-4789

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 11-1078-1103		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:05		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 13-1951-3050		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 2									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1046884	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.89	2.82	0.0369	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.960	0.800	1.000	0.089	9.32%	0.0%	48/50	0.985	0.0%
1		5	0.980	0.900	1.000	0.045	4.56%	-2.08%	49/50	0.985	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.985	0.0%
50		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.985	0.0%
100		5	0.940	0.800	1.000	0.089	9.52%	2.08%	47/50	0.94	4.57%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
1		0.900	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	0.800	1.000	0.900					

CETIS Analytical Report

Report Date: 30 Aug-17 10:05 (p 1 of 1)
Test Code: 29523-2Mb | 09-6478-4789

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 06-9898-3546		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 30 Aug-17 10:05		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek								
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site								
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts								
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10								
Sample ID: 13-1951-3050		Code: 29521-018		Client: AECOM								
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 6h		Station: Composite 2										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method				
Log(X+1)		Linear		1684252	200	Yes		Two-Point Interpolation				
Point Estimates												
Level	%	95% LCL		95% UCL	TU	95% LCL		95% UCL				
EC50	>100	n/a		n/a	<1	n/a		n/a				
96h Proportion Survived Summary												
			Calculated Variate(A/B)							Isotonic Variate		
Conc-%		Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0		D	4	1.000	1.000	1.000	0.000	0.00%	0.0%	40/40	1	0.0%
1			5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.993	0.67%
10			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.993	0.67%
50			5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.993	0.67%
100			5	0.940	0.800	1.000	0.089	9.52%	6.0%	47/50	0.94	6.0%
96h Proportion Survived Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	Outlier	1.000	1.000	1.000	1.000					
1			0.900	1.000	1.000	1.000	1.000					
10			1.000	1.000	1.000	1.000	1.000					
50			1.000	1.000	1.000	1.000	1.000					
100			1.000	1.000	0.800	1.000	0.900					

CETIS Test Data Worksheet

Report Date: 30 Aug-17 10:11 (p 1 of 1)
Test Code/ID: 14-0561-8459/29523-3Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 25 Aug-17 16:20		Species: Menidia beryllina			Sample Code: 29521-019				
End Date: 29 Aug-17 15:00		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 3				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	14	10				8	
0	D	2	27	10				10	
0	D	3	8	10				10	
0	D	4	23	10				10	
0	D	5	4	10				10	
0	L	1	29	10				10	
0	L	2	13	10				10	
0	L	3	1	10				10	
0	L	4	18	10				10	
0	L	5	25	10				10	
1		1	6	10				10	
1		2	16	10				10	
1		3	3	10				10	
1		4	12	10				10	
1		5	15	10				10	
10		1	20	10				10	
10		2	2	10				10	
10		3	30	10				10	
10		4	28	10				10	
10		5	11	10				10	
50		1	24	10				10	
50		2	10	10				10	
50		3	9	10				10	
50		4	17	10				10	
50		5	7	10				10	
100		1	5	10				10	
100		2	19	10				10	
100		3	22	10				10	
100		4	21	10				10	
100		5	26	10				10	

CETIS Summary Report

Report Date: 30 Aug-17 10:12 (p 1 of 1)
Test Code: 29523-3Mb | 14-0561-8459

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	10-3163-0969		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:20		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	29 Aug-17 15:00		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	10			
Sample ID:	06-4038-7516		Code:	29521-019			Client:	AECOM			
Sample Date:	25 Aug-17 10:35		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 10:35		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 3							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
15-6056-8353	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
16-3855-6139	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
					Lower	Upper					
15-6056-8353	96h Proportion Survived		Control Resp	0.96	0.9	>>	Yes	Passes Criteria			
16-3855-6139	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:12 (p 1 of 2)
Test Code: 29523-3Mb | 14-0561-8459

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 15-6056-8353		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:11		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10							
Sample ID: 06-4038-7516		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 3									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL	Method				
Log(X+1)		Linear		1082181	200	Yes	Two-Point Interpolation				
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			4.38	2.82	1.6E-07	Outlier Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.960	0.800	1.000	0.089	9.32%	0.0%	48/50	0.992	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.992	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.992	0.0%
50		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.992	0.0%
100		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.992	0.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:12 (p 2 of 2)
Test Code: 29523-3Mb | 14-0561-8459

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 16-3855-6139		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:11		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10							
Sample ID: 06-4038-7516		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 3									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1402449	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	4	1.000	1.000	1.000	0.000	0.00%	0.0%	40/40	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
50		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
100		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	Outlier	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

CETIS Test Data Worksheet

Report Date: 30 Aug-17 10:28 (p 1 of 1)
Test Code/ID: 12-5799-8215/29523-4Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 25 Aug-17 16:20		Species: Menidia beryllina			Sample Code: 29521-020				
End Date: 29 Aug-17 15:00		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 4				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	3	10				8	
0	D	2	25	10				10	
0	D	3	9	10				10	
0	D	4	29	10				10	
0	D	5	8	10				10	
0	L	1	18	10				10	
0	L	2	13	10				10	
0	L	3	12	10				10	
0	L	4	28	10				10	
0	L	5	21	10				10	
1		1	16	10				9	
1		2	23	10				10	
1		3	17	10				9	
1		4	19	10				10	
1		5	15	10				10	
10		1	2	10				10	
10		2	1	10				10	
10		3	6	10				10	
10		4	26	10				10	
10		5	4	10				10	
50		1	30	10				10	
50		2	5	10				10	
50		3	27	10				10	
50		4	11	10				10	
50		5	22	10				10	
100		1	14	10				10	
100		2	20	10				10	
100		3	7	10				10	
100		4	10	10				10	
100		5	24	10				10	

CETIS Summary Report

Report Date: 30 Aug-17 10:29 (p 1 of 1)
Test Code: 29523-4Mb | 12-5799-8215

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	10-3163-0969		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:20		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	29 Aug-17 15:00		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	95h		Source:	ARO - Aquatic Research Organisms, NH			Age:	10			
Sample ID:	20-6993-5038		Code:	29521-020			Client:	AECOM			
Sample Date:	25 Aug-17 11:13		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 11:13		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	5h		Station:	Composite 4							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
07-3399-4987	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
20-6433-7982	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
					Lower	Upper					
07-3399-4987	96h Proportion Survived		Control Resp	0.96	0.9	>>	Yes	Passes Criteria			
20-6433-7982	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	0.00%
0	L	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
1		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	1.000	1.000					
1		0.900	1.000	0.900	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:29 (p 1 of 2)
Test Code: 29523-4Mb | 12-5799-8215

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 07-3399-4987		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:29		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10							
Sample ID: 20-6993-5038		Code: 29521-020		Client: AECOM							
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 4									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL	Method				
Log(X+1)		Linear		340958	200	Yes	Two-Point Interpolation				
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			3.67	2.82	2.2E-04	Outlier Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.960	0.800	1.000	0.089	9.32%	0.0%	48/50	0.984	0.0%
1		5	0.960	0.900	1.000	0.055	5.71%	0.0%	48/50	0.984	0.0%
10		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.984	0.0%
50		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.984	0.0%
100		5	1.000	1.000	1.000	0.000	0.00%	-4.17%	50/50	0.984	0.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.800	1.000	1.000	1.000	1.000					
1		0.900	1.000	0.900	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:29 (p 2 of 2)
Test Code: 29523-4Mb | 12-5799-8215

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 20-6433-7982		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:29		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 10-3163-0969		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:20		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 29 Aug-17 15:00		Species: Menidia beryllina		Brine: Generic commercial salts							
Duration: 95h		Source: ARO - Aquatic Research Organisms, NH		Age: 10							
Sample ID: 20-6993-5038		Code: 29521-020		Client: AECOM							
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 4									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1897952	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	4	1.000	1.000	1.000	0.000	0.00%	0.0%	40/40	1	0.0%
1		5	0.960	0.900	1.000	0.055	5.71%	4.0%	48/50	0.99	1.0%
10		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.99	1.0%
50		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.99	1.0%
100		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.99	1.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	Outlier	1.000	1.000	1.000	1.000					
1		0.900	1.000	0.900	1.000	1.000					
10		1.000	1.000	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		1.000	1.000	1.000	1.000	1.000					

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: |

Test Species: *M. beryllina*

Lot ID: 09MBABS082217

Sample: Controls

Diluent: CLDS

SURVIVAL - Controls

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
LAB control water)	A	10	10	10	10	10	10	10	CLDS (Reference Water)	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	9		D	10	10	10	10	10	10	10
	E	10	10	10	9	9	9	9		E	10	10	10	10	10	10	10
Initials		MW	KB	LB	W	AK	CFS	KB	Comments:								
Date		8/23/17	8/23	8/23	8/24/17	8/25/17	08/26	08/27									
Time		1545	1710	1740	1535	1345	1400	1345									

CFS
08/26

Notes

Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
LAB	A	7.7	6.8	6.8	6.7	7.0	8.11	7.98	8.02	7.89	7.90	21	20	20	20	20	30	30	31	31	31	NA	NA			
CLDS	A	8.4	6.9	6.8	6.6	6.9	7.87	7.90	8.02	7.85	7.86	21	20	20	20	20	28	28	29	29	30	NA	NA			
Initials		AK	AK	LB	CFS	DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date		8/23/17	8/24/17	8/25	08/26	08/27											Exposure (Hours)					DO Meter #				
Time		1620	1415	1310	1140	1230																DO Probe #				
Incub. Temp		25	20	20	20	20																pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)																						pH Probe #				
Fed By:		KB	AK	AK	CFS		Initial					AK	AK	LB	CFS	DD	Salinity Meter #					Salinity Meter #				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: }

Test Species: *M. beryllina*

Lot ID: 09MB ABS 082217

Sample: Composite 5

Diluent: CLDS

SURVIVAL - Composite # 5

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	9	9
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	10	10	10	10		E	10	10	10	9	8	8	8
10 %	A	10	10	10	10	10	9	9	100 %	A	10	10	10	10	8	7	6
	B	10	10	10	10	10	10	10		B	10	10	10	10	8	6	5
	C	10	10	10	10	10	10	10		C	10	10	10	10	6	1	1
	D	10	10	10	9	9	8	8		D	10	10	10	5	4	2	1
	E	10	10	10	10	10	9	9		E	10	10	10	8	4	0	—

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW KB LB AK CFS KB	Comments:
Date	8/23/17 08/23 8/23 8/24/17 8/25/17 08/26 08/21	
Time	1620 1705 1746 1555 1500 1440 1425	

@CP308120

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.6	7.1	6.7	6.5	7.2	7.85	7.99	7.98	7.87	7.96	21	20	20	20	20	28	28	28	29	29	NA	NA			
10 %	A	8.6	7.0	6.6	6.4	7.2	7.91	8.02	8.02	7.99	7.99	21	20	20	20	20	28	28	29	29	30	NA	NA			
50 %	A	8.2	6.6	6.6	6.4	7.0	7.93	8.05	8.08	8.09	8.11	21	20	20	20	20	29	29	30	31	30	NA	NA			
100 %	A	7.2	6.9	6.6	6.5	6.9	7.89	8.06	8.12	8.19	8.24	21	20	20	20	20	30	30	30	31	31	NA	NA			

Initials	AK AK LB CFS DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17 8/24/17 8/25 08/26 08/21											Exposure (Hours)					DO Meter #				
Time	1635 1405 1310 1145 1230																DO Probe #				
Incub. Temp	25 20 20 20 20																pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)																	pH Probe #				
Fed By:	KB AK AK CFS																pH Probe #				
																	Salinity Meter #				
																	Salinity Meter #				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MbABS082217

Sample: Composite 6

Diluent: CLDS

SURVIVAL - Composite # 6

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	9	9	9
	B	10	10	10	10	10	10	10		B	10	10	10	10	10	8	7
	C	10	10	10	10	10	10	10		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	9	7	7
	E	10	10	10	10	10	10	10		E	10	10	10	10	8	7	7
10 %	A	10	10	10	8	8	8	7	100 %	A	10	10	10	0			
	B	10	10	10	9	9	9	9		B	10	10	10	0			
	C	10	10	10	10	10	9	9		C	10	10	10	0			
	D	10	10	10	10	10	10	10		D	10	10	10	0			
	E	10	10	10	10	10	10	10		E	10	10	10	0			

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW KB LB AK AK CFS KB	Comments:
Date	8/23/17 08/23 8/23 8/24/17 8/25/17 08/26 08/27	8/23/17 - Beaver spilled - no orgs lost
Time	1550 1720 1740 1605 1410 1440 1350	

Composite

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.0	6.8	6.5	6.2	6.2	7.88	7.91	7.97	7.87	7.87	21	20	20	20	20	28	28	28	29	29	NA	NA			
10 %	A	8.0	6.9	6.1	6.1	6.2	7.93	7.99	7.95	7.93	7.92	21	20	20	20	20	28	28	29	29	29	NA	NA			
50 %	A	7.8	6.6	6.4	6.1	6.2	7.91	8.01	8.04	8.07	8.08	21	20	20	20	20	28	29	30	30	30	NA	NA			
100 %	A	6.7	5.9				7.88	8.02				21	20	20			28	30	30	30	30	NA	NA			

Initials	AK AK LB CFS DD	RECORD OF METERS USED 8/23/17										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17 8/24/17 8/25 08/26 08/27	Exposure (Hours)										DO Meter #					DO Meter #				
Time	1645 1415 1310 1440 1230											DO Probe #					DO Probe #				
Incub. Temp	25 20 20 20 20	Water Quality Station #										pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)		Thermometer or Probe #										pH Probe #					pH Probe #				
Fed By:	KB AK CFS CFS	Initial										Salinity Meter #					Salinity Meter #				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: 1

Test Species: *M. beryllina*

Lot ID: 09MbABS082217

Sample: Composite 7

Diluent: CLDS

SURVIVAL - Composite # 7

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	10	10	10	10	50 %	A	10	10	10	10	10	6	6
	B	10	10	10	10	10	10	9		B	10	10	10	10	10	9	9
	C	10	10	10	10	10	10	9		C	10	10	10	10	9	7	7
	D	10	10	10	10	10	10	10		D	10	10	10	10	8	6	5
	E	10	10	10	9	9	9	9		E	10	10	10	10	8	7	6
10 %	A	10	10	10	10	10	9	9	100 %	A	10	10	10	0			
	B	10	10	10	10	10	10	10		B	10	10	10	0			
	C	10	10	10	10	10	10	10		C	10	10	10	0			
	D	10	10	10	10	10	10	10		D	10	10	10	0			
	E	10	10	10	10	10	10	10		E	10	10	10	0			

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

Initials	MW	KB	LB	AK	AK	CFS	KB	Comments: 8/23/17
Date	8/23/17	08/23	8/23	8/24/17	8/25/17	08/26	08/27	
Time	1615	1710	1740	1625	1420	1400	1415	

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	7.9	7.0	6.3	6.5	6.4	7.87	7.96	7.88	7.97	7.85	20	20	20	20	20	28	28	28	29	28	NA	NA			
10 %	A	8.0	7.2	6.1	6.5	6.8	7.90	8.00	7.95	7.95	7.98	20	19	20	20	20	28	28	29	29	29	NA	NA			
50 %	A	8.0	7.4	6.2	6.6	6.9	7.92	8.01	7.95	8.08	8.06	20	19	20	20	20	29	29	29	30	30	NA	NA			
100 %	A	6.8	6.5				7.92	7.98	7.95			21	19	20			30	30	29			NA	NA			

Initials	AK	AK	LB	CFS	DD	RECORD OF METERS USED 8/23/17										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17	8/24/17	8/25	08/26	08/27	Exposure (Hours)										DO Meter # 24					DO Meter #				
Time	1705	1545	1310	1440	1230											DO Probe # 95					DO Probe #				
Incub. Temp	25	20	20	20	20	Water Quality Station #										pH Meter # 109.7					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 479.9)						Thermometer or Probe #										pH Probe # 147					pH Probe #				
Fed By:	KB	AK	AK	CFS		Initial										Salinity Meter # 45130D					Salinity Meter #				

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523

Project: New Haven, CT

Client: AECOM

Incubator ID: /

Test Species: *M. beryllina*

Lot ID: 09MBAbs082217

Sample: Composite 8

Diluent: CLDS

SURVIVAL - Composite # 8

Conc	Rep	HOURS							Conc	Rep	HOURS						
		0	1	2	24	48	72	96			0	1	2	24	48	72	96
1 %	A	10	10	10	9	9	9	9	50 %	A	10	10	10	10	10	10	10
	B	10	10	10	9	9	9	9		B	10	10	10	10	10	10	10
	C	10	10	10	8	8	7	7		C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10		D	10	10	10	10	10	10	10
	E	10	10	10	9	9	9	9		E	10	10	10	10	10	10	10
10 %	A	10	10	10	10	10	10	10	100 %	A	10	10	10	4	0	—	—
	B	10	10	10	10	10	10	8		B	10	10	10	10	4	2	2
	C	10	10	10	10	10	10	10		C	10	10	10	9	2	0	—
	D	10	10	10	10	10	10	10		D	10	10	10	10	7	2	2
	E	10	10	10	10	10	10	10		E	10	10	10	6	2	0	—

Notes	
Parameter	Conditions
Dissolved Oxygen	> 40% saturation
Temperature	20 ± 1 C
Salinity	30 ppt ± 2 ppt
pH	7.8 ± 0.5

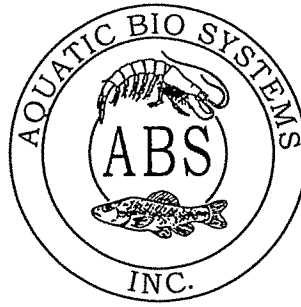
Initials	MW	KB	LB	MW	AK	CFS	KB	Comments:
Date	8/23/17	08/23	8/23	8/24	8/25/17	08/26	08/27	
Time	1600	1715	1740	1625	1645	1400	1405	

DAILY WATER QUALITIES

Conc	Rep	Dissolved Oxygen (mg/L)					pH (SU)					Temperature (C)					Salinity (ppt)					Modified Salinity (if required)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
1 %	A	8.2	7.2	6.4	6.5	7.3	7.87	8.02	7.95	7.93	7.95	21	19	20	20	20	28	28	29	30	29	NA				
10 %	A	8.2	7.3	6.2	6.4	7.2	7.91	8.04	8.00	7.95	8.01	21	19	20	20	20	28	29	29	30	30	NA				
50 %	A	7.8	7.3	6.2	6.4	7.2	7.95	8.03	8.05	8.08	8.10	21	19	20	20	20	29	30	30	31	31	NA				
100 %	A	6.9	7.5	6.5	6.4	7.2	7.94	8.04	8.10	8.17	8.18	21	19	20	20	20	30	30	31	31	32	NA				

Initials	AK	AK	LB	CFS	DD	RECORD OF METERS USED										Water Quality Station #1					Water Quality Station #2				
Date	8/23/17	8/24/17	8/25	08/26	08/27											DO Meter #					DO Meter #				
Time	1715	1550	1310	1140	1230	Exposure (Hours)										DO Probe #					DO Probe #				
Incub. Temp	21.25	20	20	20	20	Water Quality Station #										pH Meter #					pH Meter #				
FEEDING: <i>Artemia nauplii</i> (A - 4729)						Thermometer or Probe #										pH Probe #					pH Probe #				
Fed By:	KB	MW	AK	CFS		Initial										Salinity Meter #					Salinity Meter #				

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

ORGANISM HISTORY

DATE: 8/21/2017

SPECIES: Menidia beryllina

AGE: 8 day

LIFE STAGE: Juvenile

HATCH DATE: 8/13/2017


BEGAN FEEDING: Immediately

FOOD: Rotifers, Artemia sp.

Water Chemistry Record:

	Current	Range
TEMPERATURE:	<u>24 °C</u>	<u>23-26 °C</u>
SALINITY/CONDUCTIVITY:	<u>25 ppt</u>	<u>23-26 ppt</u>
TOTAL HARDNESS (as CaCO ₃):	<u>--</u>	<u>--</u>
TOTAL ALKALINITY (as CaCO ₃):	<u>210 mg/l</u>	<u>165-210 mg/l</u>
pH:	<u>8.18</u>	<u>7.87-8.24</u>

Comments:



Facility Supervisor

STUDY: 29253
CLIENT: AECOM
PROJECT: New Haven
ASSAY: MB96SPP
SPECIES: *M. beryllina*
TASK: Wet Weight Data - Balance Output File
BALANCE: Ohaus Discovery Balance Model DV215CD
Serial #: 1124024313

Date / Intials: 08/25/17 LB Ub

Rep

1	0.00085
2	0.00304
3	0.00458
4	0.00447
5	0.00316
6	0.00444
7	0.00194
8	0.00379
9	0.00167
10	0.00326
11	0.00472
12	0.00211
13	0.00386
14	0.00226
15	0.00177
16	0.00314
17	0.00193
18	0.00257
19	0.00206
20	0.00271

Mean Weight (g): 0.00292

Test Volume (L): 0.2

Loading Rate(g/L): 0.14583

CETIS Test Data Worksheet

Report Date: 30 Aug-17 10:43 (p 1 of 1)
Test Code/ID: 02-8117-9254/29523-5Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 15:45		Species: Menidia beryllina			Sample Code: 29521-010				
End Date: 27 Aug-17 13:45		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 5				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	15	10				10	
0	D	2	4	10				10	
0	D	3	30	10				10	
0	D	4	21	10				10	
0	D	5	18	10				10	
0	L	1	25	10				10	
0	L	2	24	10				10	
0	L	3	12	10				10	
0	L	4	16	10				9	
0	L	5	8	10				9	
1		1	19	10				10	
1		2	5	10				10	
1		3	28	10				10	
1		4	3	10				10	
1		5	29	10				10	
10		1	10	10				9	
10		2	22	10				10	
10		3	20	10				10	
10		4	13	10				8	
10		5	9	10				9	
50		1	11	10				10	
50		2	1	10				10	
50		3	27	10				9	
50		4	23	10				10	
50		5	26	10				8	
100		1	6	10				6	
100		2	7	10				5	
100		3	2	10				1	
100		4	14	10				1	
100		5	17	10				0	

CETIS Summary Report

Report Date: 30 Aug-17 10:44 (p 1 of 1)
Test Code: 29523-5Mb | 02-8117-9254

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	12-5436-7579		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 15:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 13:45		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	94h		Source:	ABS - Aquatic Biosystems, CO			Age:	10			
Sample ID:	21-1289-0687		Code:	29521-010			Client:	AECOM			
Sample Date:	23 Aug-17 10:20		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 10:20		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	5h		Station:	Composite 5							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
16-5960-4891	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	78.1	67.1	103	1.281	
19-2984-3945	96h Proportion Survived		Trimmed Spearman-Kärber			EC50	78	71.5	85.1	1.282	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
16-5960-4891	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
19-2984-3945	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	0.920	0.816	1.000	0.800	1.000	0.037	0.084	9.09%	8.00%
50		5	0.940	0.829	1.000	0.800	1.000	0.040	0.089	9.52%	6.00%
100		5	0.260	0.000	0.595	0.000	0.600	0.121	0.270	103.92%	74.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	0.900	0.900					
1		1.000	1.000	1.000	1.000	1.000					
10		0.900	1.000	1.000	0.800	0.900					
50		1.000	1.000	0.900	1.000	0.800					
100		0.600	0.500	0.100	0.100	0.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:44 (p 1 of 1)
Test Code: 29523-5Mb | 02-8117-9254

Menidia beryllina 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 19-2984-3945		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 10:43		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 12-5436-7579		Test Type: Survival (96h)		Analyst: Amanda Komarek							
Start Date: 23 Aug-17 15:45		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site							
Ending Date: 27 Aug-17 13:45		Species: Menidia beryllina		Brine: Generic commercial salts							
Duration: 94h		Source: ABS - Aquatic Biosystems, CO		Age: 10							
Sample ID: 21-1289-0687		Code: 29521-010		Client: AECOM							
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 10:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 5									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	26.00%	1.89	0.0188	78	71.5	85.1			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.58	2.82	0.1403	No Outliers Detected				
96h Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	0.920	0.800	1.000	0.084	9.09%	8.0%	46/50	0.93	7.0%
50		5	0.940	0.800	1.000	0.089	9.52%	6.0%	47/50	0.93	7.0%
100		5	0.260	0.000	0.600	0.270	104.00%	74.0%	13/50	0.26	74.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		0.900	1.000	1.000	0.800	0.900					
50		1.000	1.000	0.900	1.000	0.800					
100		0.600	0.500	0.100	0.100	0.000					

CETIS Analytical Report

Report Date: 30 Aug-17 10:44 (p 1 of 1)
Test Code: 29523-5Mb | 02-8117-9254

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.					
Analysis ID: 16-5960-4891		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3		Official Results: Yes						
Analyzed: 30 Aug-17 10:43		Analysis: Linear Interpolation (ICPIN)										
Batch ID: 12-5436-7579		Test Type: Survival (96h)		Analyst: Amanda Komarek								
Start Date: 23 Aug-17 15:45		Protocol: EPA/821/R-02-012 (2002)		Diluent: CLIS Reference Site								
Ending Date: 27 Aug-17 13:45		Species: Menidia beryllina		Brine: Generic commercial salts								
Duration: 94h		Source: ABS - Aquatic Biosystems, CO		Age: 10								
Sample ID: 21-1289-0687		Code: 29521-010		Client: AECOM								
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 23 Aug-17 10:20		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 5h		Station: Composite 5										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL	Method					
Log(X+1)		Linear		188726	200	Yes	Two-Point Interpolation					
Residual Analysis												
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test			2.58	2.82	0.1403	No Outliers Detected				
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	78.1	67.1	103	1.281	0.9733	1.49						
96h Proportion Survived Summary				Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect	
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
10		5	0.920	0.800	1.000	0.084	9.09%	8.0%	46/50	0.93	7.0%	
50		5	0.940	0.800	1.000	0.089	9.52%	6.0%	47/50	0.93	7.0%	
100		5	0.260	0.000	0.600	0.270	104.00%	74.0%	13/50	0.26	74.0%	
96h Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	1.000	1.000	1.000	1.000	1.000						
1		1.000	1.000	1.000	1.000	1.000						
10		0.900	1.000	1.000	0.800	0.900						
50		1.000	1.000	0.900	1.000	0.800						
100		0.600	0.500	0.100	0.100	0.000						

CETIS Test Data Worksheet

Report Date: 30 Aug-17 11:15 (p 1 of 1)
Test Code/ID: 14-8750-3417/29523-6Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 15:45		Species: Menidia beryllina			Sample Code: 29521-012				
End Date: 27 Aug-17 13:45		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 6				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	26	10	10			10	
0	D	2	9	10	10			10	
0	D	3	12	10	10			10	
0	D	4	7	10	10			10	
0	D	5	18	10	10			10	
0	L	1	22	10	10			10	
0	L	2	3	10	10			10	
0	L	3	28	10	10			10	
0	L	4	21	10	10			9	
0	L	5	11	10	9			9	
1		1	2	10	10			10	
1		2	6	10	10			10	
1		3	14	10	10			10	
1		4	27	10	10			10	
1		5	8	10	10			10	
10		1	1	10	8			7	
10		2	29	10	9			9	
10		3	17	10	10			9	
10		4	30	10	10			10	
10		5	10	10	10			10	
50		1	24	10	10			9	
50		2	15	10	10			7	
50		3	16	10	10			10	
50		4	20	10	10			7	
50		5	5	10	10			7	
100		1	25	10	0			0	
100		2	4	10	0			0	
100		3	13	10	0			0	
100		4	23	10	0			0	
100		5	19	10	0			0	

CETIS Summary Report

Report Date: 01 Sep-17 14:40 (p 1 of 1)
Test Code: 29523-6Mb | 14-8750-3417

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	12-5436-7579		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 15:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 13:45		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	94h		Source:	ABS - Aquatic Biosystems, CO			Age:	10			
Sample ID:	00-0656-6621		Code:	29521-012			Client:	AECOM			
Sample Date:	23 Aug-17 11:00		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 11:00		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	5h		Station:	Composite 6							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
04-9816-4895	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	64.9	59	69.3	1.541	
15-4998-9446	96h Proportion Survived		Spearman-Kärber			EC50	46.2	37.4	57	2.165	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
04-9816-4895	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
15-4998-9446	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	0.900	0.748	1.000	0.700	1.000	0.055	0.122	13.61%	10.00%
50		5	0.800	0.624	0.976	0.700	1.000	0.063	0.141	17.68%	20.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	0.900	0.900					
1		1.000	1.000	1.000	1.000	1.000					
10		0.700	0.900	0.900	1.000	1.000					
50		0.900	0.700	1.000	0.700	0.700					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:40 (p 1 of 1)
Test Code: 29523-6Mb | 14-8750-3417

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Analysis ID: 15-4998-9446		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:17		Analysis: Untrimmed Spearman-Kärber		Official Results: Yes							
Sample ID: 00-0656-6621		Code: 29521-012		Client: AECOM							
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 11:00		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 6									
Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	0.00%	1.66	0.0458	46.2	37.4	57			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.69	2.82	0.0904	No Outliers Detected				
96h Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
10		5	0.900	0.700	1.000	0.122	13.60%	10.0%	45/50	0.9	10.0%
50		5	0.800	0.700	1.000	0.141	17.70%	20.0%	40/50	0.8	20.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	1.000	1.000	1.000	1.000					
10		0.700	0.900	0.900	1.000	1.000					
50		0.900	0.700	1.000	0.700	0.700					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:40 (p 1 of 1)
Test Code: 29523-6Mb | 14-8750-3417

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 04-9816-4895		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 30 Aug-17 11:18		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Sample ID: 00-0656-6621		Code: 29521-012		Client: AECOM								
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 23 Aug-17 11:00		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 5h		Station: Composite 6										
Linear Interpolation Options												
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method							
Log(X+1)	Linear	1847553	200	Yes	Two-Point Interpolation							
Residual Analysis												
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value		Grubbs Extreme Value Test		2.69	2.82	0.0904	No Outliers Detected					
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	64.9	59	69.3	1.541	1.444	1.694						
96h Proportion Survived Summary												
				Calculated Variate(A/B)						Isotonic Variate		
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect	
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
1		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
10		5	0.900	0.700	1.000	0.122	13.60%	10.0%	45/50	0.9	10.0%	
50		5	0.800	0.700	1.000	0.141	17.70%	20.0%	40/50	0.8	20.0%	
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%	
96h Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	1.000	1.000	1.000	1.000	1.000						
1		1.000	1.000	1.000	1.000	1.000						
10		0.700	0.900	0.900	1.000	1.000						
50		0.900	0.700	1.000	0.700	0.700						
100		0.000	0.000	0.000	0.000	0.000						

CETIS Test Data Worksheet

Report Date: 30 Aug-17 11:24 (p 1 of 1)
Test Code/ID: 15-1707-9159/29521-7Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 15:45		Species: Menidia beryllina			Sample Code: 29521-014				
End Date: 27 Aug-17 13:45		Protocol: EPA/821/R-02-012 (2002)			Sample Source: New Haven Harbor FNP -2017				
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 7				
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	15	10	10			10	
0	D	2	1	10	10			10	
0	D	3	30	10	10			10	
0	D	4	29	10	10			10	
0	D	5	24	10	10			10	
0	L	1	5	10	10			10	
0	L	2	10	10	10			10	
0	L	3	2	10	10			10	
0	L	4	22	10	10			9	
0	L	5	13	10	9			9	
1		1	27	10	10			10	
1		2	23	10	10			9	
1		3	26	10	10			9	
1		4	9	10	10			10	
1		5	3	10	9			9	
10		1	18	10	10			9	
10		2	25	10	10			10	
10		3	6	10	10			10	
10		4	11	10	10			10	
10		5	7	10	10			10	
50		1	19	10	10			6	
50		2	28	10	10			9	
50		3	16	10	10			7	
50		4	21	10	10			5	
50		5	4	10	10			6	
100		1	20	10	0			0	
100		2	8	10	0			0	
100		3	17	10	0			0	
100		4	12	10	0			0	
100		5	14	10	0			0	

CETIS Summary Report

Report Date: 01 Sep-17 14:43 (p 1 of 1)
Test Code: 29523-7Mb | 15-1707-9159

Menidia beryllina 96-h Acute Survival Test						EnviroSystems, Inc.					
Batch ID:	12-5436-7579		Test Type:	Survival (96h)		Analyst:	Amanda Komarek				
Start Date:	23 Aug-17 15:45		Protocol:	EPA/821/R-02-012 (2002)		Diluent:	CLIS Reference Site				
Ending Date:	27 Aug-17 13:45		Species:	Menidia beryllina		Brine:	Generic commercial salts				
Duration:	94h		Source:	ABS - Aquatic Biosystems, CO		Age:	10				
Sample ID:	06-5739-9893		Code:	29521-014		Client:	AECOM				
Sample Date:	23 Aug-17 09:20		Material:	Dredged Sediment Suspended Particulate		Project:	Dredged Sediment Evaluation				
Receipt Date:	23 Aug-17 09:20		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 7							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
11-0380-2708	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	59.2	51.2	66.7	1.69	
16-1057-2153	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	56.2	49.5	61.8	1.781	
15-8665-2651	96h Proportion Survived		Trimmed Spearman-Kärber			EC50	44.4	36.4	54.3	2.25	✓
19-7491-5458	96h Proportion Survived		Trimmed Spearman-Kärber			EC50	47.9	40.2	57	2.088	
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Lower	Upper	Overlap	Decision	
11-0380-2708	96h Proportion Survived		Control Resp	1	0.9	>>	Yes		Yes	Passes Criteria	
15-8665-2651	96h Proportion Survived		Control Resp	1	0.9	>>	Yes		Yes	Passes Criteria	
16-1057-2153	96h Proportion Survived		Control Resp	1	0.9	>>	Yes		Yes	Passes Criteria	
19-7491-5458	96h Proportion Survived		Control Resp	1	0.9	>>	Yes		Yes	Passes Criteria	
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
1		5	0.940	0.872	1.000	0.900	1.000	0.025	0.055	5.83%	6.00%
10		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
50		5	0.660	0.472	0.848	0.500	0.900	0.068	0.152	22.98%	34.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	0.900	0.900					
1		1.000	0.900	0.900	1.000	0.900					
10		0.900	1.000	1.000	1.000	1.000					
50		0.600	0.900	0.700	0.500	0.600					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:42 (p 1 of 2)
Test Code: 29523-7Mb | 15-1707-9159

Menidia beryllina 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 19-7491-5458		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:25		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Sample ID: 06-5739-9893		Code: 29521-014		Client: AECOM							
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 7									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	4.00%	1.68	0.0379	47.9	40.2	57			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.35	2.82	0.0026	Outlier Detected				
96h Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.940	0.900	1.000	0.055	5.83%	6.0%	47/50	0.96	4.0%
10		5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.96	4.0%
50		5	0.660	0.500	0.900	0.152	23.00%	34.0%	33/50	0.66	34.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	0.900	1.000	0.900					
10		0.900	1.000	1.000	1.000	1.000					
50		0.600	0.900	0.700	0.500	0.600					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:42 (p 2 of 2)
Test Code: 29523-7Mb | 15-1707-9159

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Analysis ID: 15-8665-2651		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:25		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Sample ID: 06-5739-9893		Code: 29521-014		Client: AECOM							
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 7									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	4.00%	1.65	0.0433	44.4	36.4	54.3			
96h Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.940	0.900	1.000	0.055	5.83%	6.0%	47/50	0.96	4.0%
10		5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.96	4.0%
50		4	0.600	0.500	0.700	0.082	13.60%	40.0%	24/40	0.6	40.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	0.900	1.000	0.900					
10		0.900	1.000	1.000	1.000	1.000					
50		0.600	Outlier	0.700	0.500	0.600					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:42 (p 1 of 2)
 Test Code: 29523-7Mb | 15-1707-9159

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 11-0380-2708		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:25		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 06-5739-9893		Code: 29521-014		Client: AECOM							
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 7									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	934254	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.35	2.82	0.0026	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	59.2	51.2	66.7	1.69	1.5	1.952					
96h Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.940	0.900	1.000	0.055	5.83%	6.0%	47/50	0.96	4.0%
10		5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.96	4.0%
50		5	0.660	0.500	0.900	0.152	23.00%	34.0%	33/50	0.66	34.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	0.900	1.000	0.900					
10		0.900	1.000	1.000	1.000	1.000					
50		0.600	0.900	0.700	0.500	0.600					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:42 (p 2 of 2)
Test Code: 29523-7Mb | 15-1707-9159

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.	
Analysis ID: 16-1057-2153		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:25		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 06-5739-9893		Code: 29521-014		Client: AECOM							
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 09:20		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 7									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1268623	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	56.2	49.5	61.8	1.781	1.619	2.022					
96h Proportion Survived Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.940	0.900	1.000	0.055	5.83%	6.0%	47/50	0.96	4.0%
10		5	0.980	0.900	1.000	0.045	4.56%	2.0%	49/50	0.96	4.0%
50		4	0.600	0.500	0.700	0.082	13.60%	40.0%	24/40	0.6	40.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/50	0	100.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		1.000	0.900	0.900	1.000	0.900					
10		0.900	1.000	1.000	1.000	1.000					
50		0.600	Outlier	0.700	0.500	0.600					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 30 Aug-17 11:45 (p 1 of 1)
Test Code/ID: 17-1858-3587/29523-8Mb

Menidia beryllina 96-h Acute Survival Test									EnviroSystems, Inc.
Start Date: 23 Aug-17 15:45		Species: Menidia beryllina		Sample Code: 29521-016					
End Date: 27 Aug-17 13:45		Protocol: EPA/821/R-02-012 (2002)		Sample Source: New Haven Harbor FNP -2017					
Sample Date: 23 Aug-17 16:00		Material: Dredged Sediment Suspended Particulat		Sample Station: Composite 8					
Conc-%	Code	Rep	Pos	#Exposed	Survival 24h	Survival 48h	Survival 72h	Survival 96h	Notes
0	D	1	26	10		10		10	
0	D	2	9	10		10		10	
0	D	3	17	10		10		10	
0	D	4	6	10		10		10	
0	D	5	22	10		10		10	
0	L	1	24	10		10		10	
0	L	2	18	10		10		10	
0	L	3	1	10		10		10	
0	L	4	5	10		9		9	
0	L	5	11	10		9		9	
1		1	27	10		9		9	
1		2	12	10		9		9	
1		3	16	10		8		7	
1		4	28	10		10		10	
1		5	7	10		9		9	
10		1	21	10		10		10	
10		2	8	10		10		8	
10		3	30	10		10		10	
10		4	4	10		10		10	
10		5	3	10		10		10	
50		1	2	10		10		10	
50		2	25	10		10		10	
50		3	15	10		10		10	
50		4	10	10		10		10	
50		5	20	10		10		10	
100		1	19	10		0		0	
100		2	13	10		4		2	
100		3	23	10		2		0	
100		4	14	10		7		2	
100		5	29	10		2		0	

CETIS Summary Report

Report Date: 01 Sep-17 14:45 (p 1 of 1)
Test Code: 29523-8Mb | 17-1858-3587

Menidia beryllina 96-h Acute Survival Test							EnviroSystems, Inc.				
Batch ID:	12-5436-7579		Test Type:	Survival (96h)			Analyst:	Amanda Komarek			
Start Date:	23 Aug-17 15:45		Protocol:	EPA/821/R-02-012 (2002)			Diluent:	CLIS Reference Site			
Ending Date:	27 Aug-17 13:45		Species:	Menidia beryllina			Brine:	Generic commercial salts			
Duration:	94h		Source:	ABS - Aquatic Biosystems, CO			Age:	10			
Sample ID:	20-8019-1167		Code:	29521-016			Client:	AECOM			
Sample Date:	23 Aug-17 16:00		Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 16:00		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	n/a		Station:	Composite 8							
Point Estimate Summary											
Analysis ID	Endpoint		Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
19-1147-1611	96h Proportion Survived		Linear Interpolation (ICPIN)			EC50	71.5	67.6	76.6	1.398	
19-2516-9214	96h Proportion Survived		Trimmed Spearman-Kärber			EC50	71.5	68.7	74.4	1.399	✓
Test Acceptability											
Analysis ID	Endpoint		Attribute	Test Stat	TAC Limits		Overlap	Decision			
19-1147-1611	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
19-2516-9214	96h Proportion Survived		Control Resp	1	0.9	>>	Yes	Passes Criteria			
96h Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	L	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
1		5	0.880	0.744	1.000	0.700	1.000	0.049	0.110	12.45%	12.00%
10		5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	4.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	0.080	0.000	0.216	0.000	0.200	0.049	0.110	136.93%	92.00%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
0	L	1.000	1.000	1.000	0.900	0.900					
1		0.900	0.900	0.700	1.000	0.900					
10		1.000	0.800	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		0.000	0.200	0.000	0.200	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:44 (p 1 of 1)
Test Code: 29523-8Mb | 17-1858-3587

Menidia beryllina 96-h Acute Survival Test						EnviroSystems, Inc.					
Analysis ID: 19-2516-9214		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 30 Aug-17 11:46		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Sample ID: 20-8019-1167		Code: 29521-016		Client: AECOM							
Sample Date: 23 Aug-17 16:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 23 Aug-17 16:00		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: n/a		Station: Composite 8									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0	8.00%	1.85	0.00871	71.5	68.7	74.4			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.27	2.82	0.4247	No Outliers Detected				
96h Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%
1		5	0.880	0.700	1.000	0.110	12.40%	12.0%	44/50	0.947	5.33%
10		5	0.960	0.800	1.000	0.089	9.32%	4.0%	48/50	0.947	5.33%
50		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.947	5.33%
100		5	0.080	0.000	0.200	0.110	137.00%	92.0%	4/50	0.08	92.0%
96h Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	1.000	1.000	1.000	1.000	1.000					
1		0.900	0.900	0.700	1.000	0.900					
10		1.000	0.800	1.000	1.000	1.000					
50		1.000	1.000	1.000	1.000	1.000					
100		0.000	0.200	0.000	0.200	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:44 (p 1 of 1)
Test Code: 29523-8Mb | 17-1858-3587

Menidia beryllina 96-h Acute Survival Test										EnviroSystems, Inc.		
Analysis ID: 19-1147-1611		Endpoint: 96h Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 30 Aug-17 11:46		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Sample ID: 20-8019-1167		Code: 29521-016		Client: AECOM								
Sample Date: 23 Aug-17 16:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 23 Aug-17 16:00		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: n/a		Station: Composite 8										
Linear Interpolation Options												
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method							
Log(X+1)	Linear	976373	200	Yes	Two-Point Interpolation							
Residual Analysis												
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value		Grubbs Extreme Value Test		2.27	2.82	0.4247	No Outliers Detected					
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	71.5	67.6	76.6	1.398	1.306	1.48						
96h Proportion Survived Summary												
				Calculated Variate(A/B)						Isotonic Variate		
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect	
0	D	5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	1	0.0%	
1		5	0.880	0.700	1.000	0.110	12.40%	12.0%	44/50	0.947	5.33%	
10		5	0.960	0.800	1.000	0.089	9.32%	4.0%	48/50	0.947	5.33%	
50		5	1.000	1.000	1.000	0.000	0.00%	0.0%	50/50	0.947	5.33%	
100		5	0.080	0.000	0.200	0.110	137.00%	92.0%	4/50	0.08	92.0%	
96h Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	1.000	1.000	1.000	1.000	1.000						
1		0.900	0.900	0.700	1.000	0.900						
10		1.000	0.800	1.000	1.000	1.000						
50		1.000	1.000	1.000	1.000	1.000						
100		0.000	0.200	0.000	0.200	0.000						

EMBRYO WORKSHEET

DATE: 08/25/17

ESI STUDY: 29523

CLIENT: AECOM

PROJECT: New Haven

Round 1 Redo

Eggs Collected @: 1520

Pre-assay fertilization check: 96/100 ANALYST: GRS

Sperm Collected @: 1520

A mated subsample of egg+sperm must achieve ≥90% fertilization in order to be used in testing.

Egg Stock Suspension Count:

Take 1mL of egg stock suspension and using a glass graduated cylinder dilute with seawater to a final volume of 100 mL. Count a subsample of the diluted suspension to get an estimate of the egg concentration. The diluted suspension should have 40 - 50 eggs/mL, (which would represent an egg concentration of 4,000 - 5,000 in the stock suspension.)

Egg Count (per mL) of diluted suspension: 40 /mL

Sperm Stock Suspension Count:

GRS 0829
Individual sides not recorded

Once added to the egg stock, the final sperm concentration should be 1×10^5 - 1×10^7 in solution D.

1. Hemocytometer Count (D):

2. Hemocytometer Count (D):

Average Count (D): 246 $\times 10^4$ = spm solution D = 2.46×10^6

Sperm Concentrations: Solution D X 40 = Solution A = 9.84×10^7

Solution D X 20 = Solution B = 4.92×10^7

Solution D X 5 = Solution C = 1.23×10^8 GRS 0829

Sperm Count (per mL): 2.46×10^6

mL of Eggs to Add: 125

mL of Sperm to Add: 19

Gametes mixed @: 1553

Gametes must be mixed within 1 hour of collection.

Calculated Embryo Stock Concentration (per mL): 3480

Calculated Embryo Stock (mL) needed per chamber: 6000

The test concentration should be 15 - 30 embryos per mL.

Add calculated amount of embryo stock to a surrogate chamber, gently mix, then count a 5mL aliquot.

Embryo Concentration Check: 151

If the check concentration is acceptable, then proceed with embryo addition to the test.

Volume Embryo Stock (mL) added to test solutions: 1.72

Embryos Added to Test Solutions @: 1600

INITIAL COUNTS: Embryos/ 5 mL

SURROGATE A 151

SURROGATE B 153

SURROGATE C 160

Mean: 155

Organism Lot ID: 99A_PARO062017

Mean per mL: 51 31 GRS 0829

Round 1 Redo

Page 1 of 2

ENVIROSYSTEMS, INCORPORATED
REFERENCE TOXICANT ASSAY
***Arbacia punctulata* Developmental ASSAY**

MONTH/YEAR:	TOXICANT: Copper
ORGANISM: <i>Arbacia punctulata</i>	LOT:

Concentration	DO (mg/L)	pH (SU)	SALINITY (ppt)
Lab Control			
1 ppb			
5 ppb			
10 ppb			
50 ppb			
100 ppb			

Water Quality Station	
DO meter #	
DO probe #	
pH meter #	
pH probe #	
Salinity meter	
Initials	
Date	

SPERM DILUTIONS:

Hemocytometer Count E: 246 X 10^4 = Sperm Solution D = 2.46×10^6

Sperm Concentrations: Solution E X 40 = Solution A = 9.84×10^7 SPM

Solution E X 20 = Solution B = 4.92×10^7 SPM

Solution E X 5 = Solution C = 1.23×10^7 SPM

②⑩ GRS 0831
Data Sheet not provided
Soft tax sheet was used
as template

FINAL COUNTS:

Final Sperm Count: 2.46×10^6

Final Egg Count: 4000

TEST TIMES:

Sperm Collected: 1520

Eggs Collected: 1520

Gametes Mixed: 1553

Gametes Added to Test: _____

SURROGATES:

	Embryos / 5 ml	Embryos / ml
Surrogate A	<u>1518</u>	
Surrogate B	<u>153</u>	
Surrogate C	<u>160</u>	
Mean	<u>155</u>	

Copper Reference Toxicant Stock Solution: _____

Saltwater ID: _____

P:\General Projects\FORMS\LABFORMS\dmr&RefTox\Arbacia punctulata Developmental Reference Toxicant 2013.wpd

Arbacia punctulata Survival / Development Assay

ESI Study: 29523 Assay Start: 8/25/17
 Client: AECOM - New Haven, CT Assay End: 8/28/17 1125
 Count Date: 08/28/2017 Initials: CA

Treatment	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
Lab Control Water	125/125	140/140	114/113	143/143	123/122
XXXX Reference Water	129/129	139/136	130/130	138/138	142/135
Composite 1 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	124/123	88/88	129/129	121/121	117/116
10%	118/116	109/108	116/115	111/108	118/114
50%	112/106	139/133	156/149	152/147	141/137
100%	135/96	142/99	127/83	132/91	119/78
Composite 2 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	123/121	116/105	117/95	134/131	94/89
10%	114/34	84/34	129/48	133/51	137/41
50%	13/0	1/0	6/0	4/0	7/0
100%	0/0	0/0	0/0	0/0	0/0
Composite 3 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	90/88	124/123	89/87	111/109	101/101
10%	103/99	108/102	117/108	99/91	114/109
50%	0/0	0/0	0/0	0/0	0/0
100%	0/0	0/0	0/0	0/0	0/0
Composite 4 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	116/115	126/125	111/111	128/125	120/115
10%	105/103	128/114	120/110	121/102	101/88
50%	0/0	0/0	0/0	0/0	0/0
100%	0/0	0/0	0/0	0/0	0/0

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #: 29523	Client: AECOM	Project: New Haven
Test Species: <i>A. punctulata</i>	Lot ID: 99APAR0062017	Diluent: CLDS

DAILY WATER QUALITIES

Concentration		Dissolved Oxygen (mg/L)		pH (SU)		Temperature (C)		Salinity (ppt)	
		0 hr ^{8/24}	END <u>72</u> hr	0 hr	END <u>72</u> hr	0 hr	END <u>72</u> hr	0 hr	END <u>72</u> hr
Controls	Lab	7.4	7.2	8.07	8.01	21	22	30	30
	CLDS	7.9	7.3	7.87	8.00	21	22	28	28
Composite #1	1 %	7.5	7.3	7.87	7.99	21	22	28	28
	10 %	7.6	7.3	7.89	8.01	21	22	28	29
	50 %	7.6	7.3	7.99	8.05	21	22	29	29
	100 %	7.5	7.3	8.07	8.12	21	22	30	30
Composite #2	1 %	7.7 ^{6.8 8/24/17}	7.32 ^{6.8 8/24/17}	7.88	8.03 8.02	21	22 ^{21 8/24/17}	28	28
	10 %	7.8 ^{6.8 8/24/17}	7.3	7.92	8.08 8.06	21	22 ^{21 8/24/17}	28	28 29
	50 %	7.8 ^{6.8 8/24/17}	7.23 ^{6.8 8/24/17}	8.01	8.25 8.14	21 ^{6.8 8/24/17}	22 ^{21 8/24/17}	29	30 29
	100 %	6.8 ^{6.8 8/24/17}	7.2	8.03	8.28 8.23	21	22 ^{21 8/24/17}	30	31
Composite #3	1 %	7.7 ^{6.8 8/24/17}	7.23 ^{6.8 8/24/17}	7.86	8.02 8.03	21	21 ^{21 8/24/17}	28	28
	10 %	7.6 ^{6.8 8/24/17}	7.3	7.88	8.06 8.08	21	21 ^{21 8/24/17}	28	29 28
	50 %	7.5 ^{6.8 8/24/17}	7.32 ^{6.8 8/24/17}	7.94	8.16 8.25	21 ^{6.8 8/24/17}	21 ^{21 8/24/17}	29	29 30
	100 %	6.8 ^{6.8 8/24/17}	7.2	7.96	8.23 8.28	21	21 ^{21 8/24/17}	30	31
Composite #4	1 %	7.2	7.2	7.88	8.03	21	22	28	28
	10 %	7.6	7.2	7.90	8.04	21	22	28	28
	50 %	7.2	7.2	7.96	8.21	21	22	29	29
	100 %	5.5	7.1	7.99	8.31	21	22	30	30
Initials		^{6.8 8/24/17} ^{6.8 8/24/17} LB	RECORD OF METERS USED					Water Quality Station # <u>1</u>	
Date		8/25/17	8/28	Exposure				DO Meter #	24
Time		1600	1255			0	24	DO Probe #	95
Incub. Temp		20°	21°	Water Quality Station #		1	1	pH Meter #	1097
Comments: ^{6.8 8/24/17} Original data obtained by ^{6.8 8/24/17} 8/25/17				Thermometer or Probe #		YS130D	YS130D	pH Probe #	147
^{6.8 8/24/17} Data transcribed from M. benyllina sheet				Initial		^{6.8 8/24/17} LB	LB	Salinity Meter	YS130D

CETIS Test Data Worksheet

Report Date: 29 Aug-17 12:28 (p 1 of 1)
Test Code/ID: 05-7565-8624/29523-1Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 25 Aug-17 16:00		Species: Arbacia punctulata		Sample Code: 29521-002			
End Date: 28 Aug-17 11:25		Protocol: EPA/600/R-95/136 (1995)		Sample Source: New Haven Harbor FNP -2017			
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulat		Sample Station: Composite 1			
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	17	155	129	129	
0	D	2	1	155	139	136	
0	D	3	30	155	130	130	
0	D	4	4	155	138	138	
0	D	5	28	155	142	135	
0	L	1	21	155	125	125	
0	L	2	15	155	140	140	
0	L	3	16	155	114	113	
0	L	4	11	155	143	143	
0	L	5	26	155	123	122	
1		1	23	155	124	123	
1		2	2	155	88	88	
1		3	14	155	129	129	
1		4	24	155	121	121	
1		5	3	155	117	116	
10		1	18	155	118	116	
10		2	6	155	109	108	
10		3	22	155	116	115	
10		4	8	155	111	108	
10		5	12	155	118	114	
50		1	19	155	112	106	
50		2	5	155	139	133	
50		3	13	155	156	149	
50		4	9	155	152	147	
50		5	27	155	141	137	
100		1	20	155	135	96	
100		2	25	155	142	99	
100		3	29	155	127	83	
100		4	7	155	132	91	
100		5	10	155	119	78	

CETIS Summary Report

Report Date: 29 Aug-17 13:28 (p 1 of 1)
Test Code: 29523-1Ap | 05-7565-8624

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Batch ID:	05-4045-2670			Test Type:	Survival-Development			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:00			Protocol:	EPA/600/R-95/136 (1995)			Diluent:	CLIS Reference Site			
Ending Date:	28 Aug-17 11:25			Species:	Arbacia punctulata			Brine:	Generic commercial salts			
Duration:	67h			Source:	In-House Culture			Age:	<4			
Sample ID:	09-8418-6650			Code:	29521-002			Client:	AECOM			
Sample Date:	25 Aug-17 09:30			Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 09:30			Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h			Station:	Composite 1							
Point Estimate Summary												
Analysis ID	Endpoint			Point Estimate Method			Level	%	95% LCL	95% UCL	TU	✓
14-3059-9022	Proportion Normal			Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
18-8486-7596	Proportion Normal			Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
13-1884-6473	Proportion Survived			Linear Interpolation (ICPIN)			EC50	>100	n/a	n/a	<1	✓
Proportion Normal Summary												
Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.862	0.831	0.893	0.832	0.890	0.011	0.025	2.93%	0.00%	
0	L	5	0.830	0.729	0.931	0.729	0.923	0.036	0.081	9.81%	3.74%	
1		5	0.745	0.616	0.873	0.568	0.832	0.046	0.103	13.87%	13.62%	
10		5	0.724	0.693	0.755	0.697	0.748	0.011	0.025	3.47%	16.02%	
50		5	0.866	0.729	1.000	0.684	0.955	0.049	0.110	12.69%	-0.46%	
100		5	0.577	0.506	0.647	0.503	0.639	0.025	0.057	9.83%	33.08%	
Proportion Survived Summary												
Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.875	0.829	0.921	0.832	0.916	0.017	0.037	4.26%	0.00%	
0	L	5	0.832	0.735	0.930	0.735	0.923	0.035	0.079	9.45%	4.87%	
1		5	0.747	0.618	0.876	0.568	0.832	0.047	0.104	13.94%	14.60%	
10		5	0.738	0.705	0.771	0.703	0.761	0.012	0.027	3.64%	15.63%	
50		5	0.902	0.766	1.000	0.723	1.000	0.049	0.110	12.15%	-3.10%	
100		5	0.845	0.776	0.914	0.768	0.916	0.025	0.056	6.59%	3.39%	
Proportion Normal Detail												
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.877	0.839	0.890	0.871						
0	L	0.806	0.903	0.729	0.923	0.787						
1		0.794	0.568	0.832	0.781	0.748						
10		0.748	0.697	0.742	0.697	0.735						
50		0.684	0.858	0.955	0.948	0.884						
100		0.619	0.639	0.535	0.587	0.503						
Proportion Survived Detail												
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.897	0.839	0.890	0.916						
0	L	0.806	0.903	0.735	0.923	0.794						
1		0.800	0.568	0.832	0.781	0.755						
10		0.761	0.703	0.748	0.716	0.761						
50		0.723	0.897	1.000	0.981	0.910						
100		0.871	0.916	0.819	0.852	0.768						

CETIS Analytical Report

Report Date: 29 Aug-17 13:28 (p 1 of 3)
Test Code: 29523-1Ap | 05-7565-8624

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 18-8486-7596		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:26		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-8418-6650		Code: 29521-002		Client: AECOM							
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 09:30		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 1									
Linear Interpolation Options											
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method	
Log(X+1)		Linear		1599905		200		Yes		Two-Point Interpolation	
Residual Analysis											
Attribute		Method		Test Stat		Critical		P-Value		Decision(α:5%)	
Extreme Value		Grubbs Extreme Value Test		2.89		2.82		0.0367		Outlier Detected	
Point Estimates											
Level		%		95% LCL		95% UCL		TU		95% LCL 95% UCL	
EC50		>100		n/a		n/a		<1		n/a n/a	
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%		Code		Count		Mean		Min		Max	
0		D		5		0.862		0.832		0.890	
1				5		0.745		0.568		0.832	
10				5		0.724		0.697		0.748	
50				5		0.866		0.684		0.955	
100				5		0.577		0.503		0.639	
Proportion Normal Detail											
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4	
0		D		0.832		0.877		0.839		0.890	
1				0.794		0.568		0.832		0.781	
10				0.748		0.697		0.742		0.697	
50				0.684		0.858		0.955		0.948	
100				0.619		0.639		0.535		0.587	

CETIS Analytical Report

Report Date: 29 Aug-17 13:28 (p 2 of 3)
Test Code: 29523-1Ap | 05-7565-8624

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Analysis ID: 14-3059-9022		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3								
Analyzed: 29 Aug-17 13:26		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek								
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site								
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts								
Duration: 67h		Source: In-House Culture		Age: <4								
Sample ID: 09-8418-6650		Code: 29521-002		Client: AECOM								
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 25 Aug-17 09:30		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 6h		Station: Composite 1										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method				
Log(X+1)		Linear		1599653	200	Yes		Two-Point Interpolation				
Point Estimates												
Level	%	95% LCL		95% UCL	TU	95% LCL		95% UCL				
EC50	>100	n/a		n/a	<1	n/a		n/a				
Proportion Normal Summary				Calculated Variate(A/B)							Isotonic Variate	
Conc-%		Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0		D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1			5	0.745	0.568	0.832	0.103	13.90%	13.6%	577/775	0.793	7.97%
10			5	0.724	0.697	0.748	0.025	3.47%	16.0%	561/775	0.793	7.97%
50			4	0.911	0.858	0.955	0.048	5.26%	-5.73%	566/621	0.793	7.97%
100			5	0.577	0.503	0.639	0.057	9.83%	33.1%	447/775	0.577	33.1%
Proportion Normal Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	0.832	0.877	0.839	0.890	0.871					
1			0.794	0.568	0.832	0.781	0.748					
10			0.748	0.697	0.742	0.697	0.735					
50			Outlier	0.858	0.955	0.948	0.884					
100			0.619	0.639	0.535	0.587	0.503					

CETIS Analytical Report

Report Date: 29 Aug-17 13:28 (p 3 of 3)
Test Code: 29523-1Ap | 05-7565-8624

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 13-1884-6473		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:26		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-8418-6650		Code: 29521-002		Client: AECOM							
Sample Date: 25 Aug-17 09:30		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 09:30		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 6h		Station: Composite 1									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method			
Log(X+1)		Linear		1554445	200	Yes		Two-Point Interpolation			
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.76	2.82	0.0653	No Outliers Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	>100	n/a	n/a	<1	n/a	n/a					
Proportion Survived Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.747	0.568	0.832	0.104	13.90%	14.6%	579/775	0.808	7.63%
10		5	0.738	0.703	0.761	0.027	3.64%	15.6%	572/775	0.808	7.63%
50		5	0.902	0.723	1.000	0.110	12.20%	-3.1%	700/776	0.808	7.63%
100		5	0.845	0.768	0.916	0.056	6.59%	3.39%	655/775	0.808	7.63%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.800	0.568	0.832	0.781	0.755					
10		0.761	0.703	0.748	0.716	0.761					
50		0.723	0.897	1.000	0.981	0.910					
100		0.871	0.916	0.819	0.852	0.768					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 12:33 (p 1 of 1)
Test Code/ID: 14-0213-6970/29523-2Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 25 Aug-17 16:00		Species: Arbacia punctulata			Sample Code: 29521-018		
End Date: 28 Aug-17 11:25		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 2		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	6	155	129	129	
0	D	2	14	155	139	136	
0	D	3	25	155	130	130	
0	D	4	10	155	138	138	
0	D	5	13	155	142	135	
0	L	1	5	155	125	125	
0	L	2	1	155	140	140	
0	L	3	4	155	114	113	
0	L	4	18	155	143	143	
0	L	5	19	155	123	122	
1		1	21	155	123	121	
1		2	28	155	116	105	
1		3	16	155	117	95	
1		4	20	155	134	131	
1		5	15	155	94	89	
10		1	9	155	114	34	
10		2	2	155	84	34	
10		3	30	155	129	48	
10		4	27	155	133	51	
10		5	24	155	137	41	
50		1	7	155	13	0	
50		2	12	155	1	0	
50		3	29	155	6	0	
50		4	3	155	4	0	
50		5	11	155	7	0	
100		1	8	155	0	0	
100		2	22	155	0	0	
100		3	23	155	0	0	
100		4	26	155	0	0	
100		5	17	155	0	0	

CETIS Summary Report

Report Date: 29 Aug-17 13:18 (p 1 of 1)
Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Batch ID:	05-4045-2670			Test Type:	Survival-Development			Analyst:	Amanda Komarek		
Start Date:	25 Aug-17 16:00			Protocol:	EPA/600/R-95/136 (1995)			Diluent:	CLIS Reference Site		
Ending Date:	28 Aug-17 11:25			Species:	Arbacia punctulata			Brine:	Generic commercial salts		
Duration:	67h			Source:	In-House Culture			Age:	<4		
Sample ID:	09-5276-1895			Code:	29521-018			Client:	AECOM		
Sample Date:	25 Aug-17 10:35			Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation		
Receipt Date:	25 Aug-17 10:35			Source:	New Haven Harbor FNP -2017 (NHHarborF						
Sample Age:	5h			Station:	Composite 2						
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
09-9817-1672	Proportion Normal	Linear Interpolation (ICPIN)				EC50	4.77	3.29	6.13	20.96	
13-9470-5031	Proportion Normal	Linear Interpolation (ICPIN)				EC50	4.43	2.88	6	22.56	
10-3628-4322	Proportion Normal	Trimmed Spearman-Kärber				EC50	3.86	3.43	4.35	25.91	✓
15-7246-2672	Proportion Normal	Trimmed Spearman-Kärber				EC50	4.21	3.8	4.67	23.74	
07-0555-4050	Proportion Survived	Linear Interpolation (ICPIN)				EC50	20.9	15.6	23.3	4.78	
15-0297-8852	Proportion Survived	Linear Interpolation (ICPIN)				EC50	21.6	19.4	23.7	4.622	
07-5974-6192	Proportion Survived	Trimmed Spearman-Kärber				EC50	20.6	20	21.2	4.851	
14-9069-3109	Proportion Survived	Trimmed Spearman-Kärber				EC50	21.3	20.8	21.9	4.69	
Proportion Normal Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.862	0.831	0.893	0.832	0.890	0.011	0.025	2.93%	0.00%
0	L	5	0.830	0.729	0.931	0.729	0.923	0.036	0.081	9.81%	3.74%
1		5	0.698	0.557	0.839	0.574	0.845	0.051	0.113	16.25%	19.01%
10		5	0.268	0.206	0.331	0.219	0.329	0.023	0.051	18.82%	68.86%
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.875	0.829	0.921	0.832	0.916	0.017	0.037	4.26%	0.00%
0	L	5	0.832	0.735	0.930	0.735	0.923	0.035	0.079	9.45%	4.87%
1		5	0.754	0.636	0.871	0.606	0.865	0.042	0.094	12.52%	13.86%
10		5	0.770	0.597	0.943	0.542	0.884	0.062	0.139	18.10%	11.95%
50		5	0.040	0.004	0.076	0.006	0.084	0.013	0.029	71.59%	95.43%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
0	L	0.806	0.903	0.729	0.923	0.787					
1		0.781	0.677	0.613	0.845	0.574					
10		0.219	0.219	0.310	0.329	0.265					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
0	L	0.806	0.903	0.735	0.923	0.794					
1		0.794	0.748	0.755	0.865	0.606					
10		0.735	0.542	0.832	0.858	0.884					
50		0.084	0.006	0.039	0.026	0.045					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 1 of 4)
 Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test						EnviroSystems, Inc.					
Analysis ID: 15-7246-2672		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:13		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Trimmed Spearman-Kärber Estimates											
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL				
Control Threshold	0.138	19.01%	0.624	0.0224	4.21	3.8	4.67				
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.9	2.82	0.0347	Outlier Detected						
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		5	0.698	0.574	0.845	0.113	16.30%	19.0%	541/775	0.698	19.0%
10		5	0.268	0.219	0.329	0.051	18.80%	68.9%	208/775	0.268	68.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.781	0.677	0.613	0.845	0.574					
10		0.219	0.219	0.310	0.329	0.265					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 2 of 4)
Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 10-3628-4322		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3		Official Results: Yes					
Analyzed: 29 Aug-17 13:13		Analysis: Trimmed Spearman-Kärber									
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM		Dredged Sediment Evaluation					
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.138	23.28%	0.587	0.0258	3.86	3.43	4.35			
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		4	0.661	0.574	0.781	0.090	13.60%	23.3%	410/620	0.661	23.3%
10		5	0.268	0.219	0.329	0.051	18.80%	68.9%	208/775	0.268	68.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.781	0.677	0.613	Outlier	0.574					
10		0.219	0.219	0.310	0.329	0.265					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:53 (p 1 of 1)
Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 09-9817-1672		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:14		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	134917	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.9	2.82	0.0347	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	4.77	3.29	6.13	20.96	16.3	30.36					
Proportion Normal Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		5	0.698	0.574	0.845	0.113	16.30%	19.0%	541/775	0.698	19.0%
10		5	0.268	0.219	0.329	0.051	18.80%	68.9%	208/775	0.268	68.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.781	0.677	0.613	0.845	0.574					
10		0.219	0.219	0.310	0.329	0.265					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 1 of 3)
 Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 13-9470-5031		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:14		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1707004	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	4.43	2.88	6	22.56	16.68	34.68					
Proportion Normal Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		4	0.661	0.574	0.781	0.090	13.60%	23.3%	410/620	0.661	23.3%
10		5	0.268	0.219	0.329	0.051	18.80%	68.9%	208/775	0.268	68.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.781	0.677	0.613	Outlier	0.574					
10		0.219	0.219	0.310	0.329	0.265					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 3 of 4)
 Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test						EnviroSystems, Inc.					
Analysis ID: 07-5974-6192		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:13		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Trimmed Spearman-Kärber Estimates											
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL				
Control Threshold	0.125	12.91%	1.31	0.0063	20.6	20	21.2				
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.9	2.82	0.0354	Outlier Detected						
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.754	0.606	0.865	0.094	12.50%	13.9%	584/775	0.762	12.9%
10		5	0.770	0.542	0.884	0.139	18.10%	11.9%	597/775	0.762	12.9%
50		5	0.040	0.006	0.084	0.029	71.60%	95.4%	31/775	0.04	95.4%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.794	0.748	0.755	0.865	0.606					
10		0.735	0.542	0.832	0.858	0.884					
50		0.084	0.006	0.039	0.026	0.045					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 4 of 4)
 Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 14-9069-3109		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:13		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.125	9.64%	1.33	0.00587	21.3	20.8	21.9			
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.754	0.606	0.865	0.094	12.50%	13.9%	584/775	0.79	9.64%
10		4	0.827	0.735	0.884	0.065	7.83%	5.42%	513/620	0.79	9.64%
50		5	0.040	0.006	0.084	0.029	71.60%	95.4%	31/775	0.04	95.4%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.794	0.748	0.755	0.865	0.606					
10		0.735	Outlier	0.832	0.858	0.884					
50		0.084	0.006	0.039	0.026	0.045					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 2 of 3)
 Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 07-0555-4050		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:14		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 09-5276-1895		Code: 29521-018		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method			
Log(X+1)		Linear		215507	200	Yes		Two-Point Interpolation			
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.9	2.82	0.0354	Outlier Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	20.9	15.6	23.3	4.78	4.292	6.43					
Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.754	0.606	0.865	0.094	12.50%	13.9%	584/775	0.762	12.9%
10		5	0.770	0.542	0.884	0.139	18.10%	11.9%	597/775	0.762	12.9%
50		5	0.040	0.006	0.084	0.029	71.60%	95.4%	31/775	0.04	95.4%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.794	0.748	0.755	0.865	0.606					
10		0.735	0.542	0.832	0.858	0.884					
50		0.084	0.006	0.039	0.026	0.045					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:17 (p 3 of 3)
Test Code: 29523-2Ap | 14-0213-6970

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 15-0297-8852		Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3					
Analyzed: 29 Aug-17 13:14		Analysis: Linear Interpolation (ICPIN)				Official Results: Yes					
Batch ID: 05-4045-2670		Test Type: Survival-Development				Analyst: Amanda Komarek					
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site					
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata				Brine: Generic commercial salts					
Duration: 67h		Source: In-House Culture				Age: <4					
Sample ID: 09-5276-1895		Code: 29521-018				Client: AECOM					
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate				Project: Dredged Sediment Evaluation					
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 2									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method			
Log(X+1)		Linear		130931	200	Yes		Two-Point Interpolation			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	21.6	19.4	23.7	4.622	4.223	5.165					
Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.754	0.606	0.865	0.094	12.50%	13.9%	584/775	0.79	9.64%
10		4	0.827	0.735	0.884	0.065	7.83%	5.42%	513/620	0.79	9.64%
50		5	0.040	0.006	0.084	0.029	71.60%	95.4%	31/775	0.04	95.4%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.794	0.748	0.755	0.865	0.606					
10		0.735	Outlier	0.832	0.858	0.884					
50		0.084	0.006	0.039	0.026	0.045					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 12:34 (p 1 of 1)
Test Code/ID: 12-6326-8142/29523-3Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 25 Aug-17 16:00		Species: Arbacia punctulata			Sample Code: 29521-019		
End Date: 28 Aug-17 11:25		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 3		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	13	155	129	129	
0	D	2	16	155	139	136	
0	D	3	21	155	130	130	
0	D	4	20	155	138	138	
0	D	5	28	155	142	135	
0	L	1	11	155	125	125	
0	L	2	17	155	140	140	
0	L	3	6	155	114	113	
0	L	4	1	155	143	143	
0	L	5	29	155	123	122	
1		1	22	155	90	88	
1		2	8	155	124	123	
1		3	3	155	89	87	
1		4	14	155	111	109	
1		5	27	155	101	101	
10		1	25	155	103	99	
10		2	26	155	108	102	
10		3	4	155	117	108	
10		4	9	155	99	91	
10		5	15	155	114	109	
50		1	5	155	0	0	
50		2	30	155	0	0	
50		3	10	155	0	0	
50		4	19	155	0	0	
50		5	23	155	0	0	
100		1	7	155	0	0	
100		2	24	155	0	0	
100		3	18	155	0	0	
100		4	12	155	0	0	
100		5	2	155	0	0	

CETIS Summary Report

Report Date: 29 Aug-17 13:35 (p 1 of 1)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Batch ID:	05-4045-2670			Test Type:			Survival-Development			Analyst:	Amanda Komarek	
Start Date:	25 Aug-17 16:00			Protocol:			EPA/600/R-95/136 (1995)			Diluent:	CLIS Reference Site	
Ending Date:	28 Aug-17 11:25			Species:			Arbacia punctulata			Brine:	Generic commercial salts	
Duration:	67h			Source:			In-House Culture			Age:	<4	
Sample ID:	15-0765-3354			Code:			29521-019			Client:	AECOM	
Sample Date:	25 Aug-17 10:35			Material:			Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation	
Receipt Date:	25 Aug-17 10:35			Source:			New Haven Harbor FNP -2017 (NHHarborF					
Sample Age:	5h			Station:			Composite 3					
Point Estimate Summary												
Analysis ID	Endpoint		Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
09-6701-0986	Proportion Normal		Linear Interpolation (ICPIN)				EC50	17.1	15.1	18.8	5.841	
10-8996-4669	Proportion Normal		Linear Interpolation (ICPIN)				EC50	17.6	15.5	18.8	5.675	
03-4774-1452	Proportion Normal		Trimmed Spearman-Kärber				EC50	17.4	16.6	18.1	5.756	
20-8468-4247	Proportion Normal		Trimmed Spearman-Kärber				EC50	16.9	16.1	17.7	5.923	✓
01-3303-2935	Proportion Survived		Linear Interpolation (ICPIN)				EC50	17.6	15.7	19.3	5.69	
04-9187-9008	Proportion Survived		Linear Interpolation (ICPIN)				EC50	18	16	19.7	5.541	
11-2628-1050	Proportion Survived		Trimmed Spearman-Kärber				EC50	17.3	16.6	18.1	5.771	
20-1905-2802	Proportion Survived		Trimmed Spearman-Kärber				EC50	17.8	17.1	18.5	5.621	
Proportion Normal Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.862	0.831	0.893	0.832	0.890	0.011	0.025	2.93%	0.00%	
0	L	5	0.830	0.729	0.931	0.729	0.923	0.036	0.081	9.81%	3.74%	
1		5	0.655	0.535	0.776	0.561	0.794	0.044	0.097	14.86%	23.95%	
10		5	0.657	0.598	0.715	0.587	0.703	0.021	0.047	7.20%	23.80%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Survived Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.875	0.829	0.921	0.832	0.916	0.017	0.037	4.26%	0.00%	
0	L	5	0.832	0.735	0.930	0.735	0.923	0.035	0.079	9.45%	4.87%	
1		5	0.665	0.546	0.783	0.574	0.800	0.043	0.095	14.35%	24.04%	
10		5	0.698	0.638	0.758	0.639	0.755	0.022	0.048	6.90%	20.21%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Normal Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.877	0.839	0.890	0.871						
0	L	0.806	0.903	0.729	0.923	0.787						
1		0.568	0.794	0.561	0.703	0.652						
10		0.639	0.658	0.697	0.587	0.703						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						
Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.897	0.839	0.890	0.916						
0	L	0.806	0.903	0.735	0.923	0.794						
1		0.581	0.800	0.574	0.716	0.652						
10		0.665	0.697	0.755	0.639	0.735						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 1 of 4)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 03-4774-1452		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3		Official Results: Yes					
Analyzed: 29 Aug-17 13:32		Analysis: Trimmed Spearman-Kärber									
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM		Dredged Sediment Evaluation					
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project:							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.138	23.88%	1.24	0.00924	17.4	16.6	18.1			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.06	2.82	0.0150	Outlier Detected				
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc.-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		5	0.655	0.561	0.794	0.097	14.90%	24.0%	508/775	0.656	23.9%
10		5	0.657	0.587	0.703	0.047	7.20%	23.8%	509/775	0.656	23.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.568	0.794	0.561	0.703	0.652					
10		0.639	0.658	0.697	0.587	0.703					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 2 of 4)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 20-8468-4247		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3		Official Results: Yes					
Analyzed: 29 Aug-17 13:32		Analysis: Trimmed Spearman-Kärber									
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM		Dredged Sediment Evaluation					
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project:							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.138	25.88%	1.23	0.01	16.9	16.1	17.7			
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		4	0.621	0.561	0.703	0.069	11.00%	28.0%	385/620	0.639	25.9%
10		5	0.657	0.587	0.703	0.047	7.20%	23.8%	509/775	0.639	25.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.568	Outlier	0.561	0.703	0.652					
10		0.639	0.658	0.697	0.587	0.703					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 14:57 (p 1 of 1)
 Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 10-8996-4669		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:32		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	2109238	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.06	2.82	0.0150	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	17.6	15.5	18.8	5.675	5.333	6.435					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		5	0.655	0.561	0.794	0.097	14.90%	24.0%	508/775	0.656	23.9%
10		5	0.657	0.587	0.703	0.047	7.20%	23.8%	509/775	0.656	23.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.568	0.794	0.561	0.703	0.652					
10		0.639	0.658	0.697	0.587	0.703					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 1 of 3)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 09-6701-0986		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:32		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1890452	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	17.1	15.1	18.8	5.841	5.309	6.637					
Proportion Normal Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		4	0.621	0.561	0.703	0.069	11.00%	28.0%	385/620	0.639	25.9%
10		5	0.657	0.587	0.703	0.047	7.20%	23.8%	509/775	0.639	25.9%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.568	Outlier	0.561	0.703	0.652					
10		0.639	0.658	0.697	0.587	0.703					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 3 of 4)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 20-1905-2802		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:32		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.125	22.12%	1.25	0.00859	17.8	17.1	18.5			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.86	2.82	0.0425	Outlier Detected				
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc.-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.665	0.574	0.800	0.095	14.40%	24.0%	515/775	0.681	22.1%
10		5	0.698	0.639	0.755	0.048	6.90%	20.2%	541/775	0.681	22.1%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.581	0.800	0.574	0.716	0.652					
10		0.665	0.697	0.755	0.639	0.735					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 4 of 4)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 11-2628-1050		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:32		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.125	24.06%	1.24	0.0093	17.3	16.6	18.1			
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		4	0.631	0.574	0.716	0.067	10.60%	27.9%	391/620	0.664	24.1%
10		5	0.698	0.639	0.755	0.048	6.90%	20.2%	541/775	0.664	24.1%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.581	Outlier	0.574	0.716	0.652					
10		0.665	0.697	0.755	0.639	0.735					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 2 of 3)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 04-9187-9008		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:32		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM							
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 3									
Linear Interpolation Options											
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method			
Log(X+1)		Linear		1432113	200	Yes		Two-Point Interpolation			
Residual Analysis											
Attribute		Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.86	2.82	0.0425	Outlier Detected			
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	18	16	19.7	5.541	5.072	6.24					
Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.665	0.574	0.800	0.095	14.40%	24.0%	515/775	0.681	22.1%
10		5	0.698	0.639	0.755	0.048	6.90%	20.2%	541/775	0.681	22.1%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.581	0.800	0.574	0.716	0.652					
10		0.665	0.697	0.755	0.639	0.735					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:35 (p 3 of 3)
Test Code: 29523-3Ap | 12-6326-8142

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Analysis ID: 01-3303-2935		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 29 Aug-17 13:32		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes								
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek								
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site								
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts								
Duration: 67h		Source: In-House Culture		Age: <4								
Sample ID: 15-0765-3354		Code: 29521-019		Client: AECOM								
Sample Date: 25 Aug-17 10:35		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation								
Receipt Date: 25 Aug-17 10:35		Source: New Haven Harbor FNP -2017 (NHHarborF										
Sample Age: 5h		Station: Composite 3										
Linear Interpolation Options												
X Transform		Y Transform		Seed	Resamples	Exp 95% CL		Method				
Log(X+1)		Linear		677133	200	Yes		Two-Point Interpolation				
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	17.6	15.7	19.3	5.69	5.178	6.357						
Proportion Survived Summary				Calculated Variate(A/B)							Isotonic Variate	
Conc-%		Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0		D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1			4	0.631	0.574	0.716	0.067	10.60%	27.9%	391/620	0.664	24.1%
10			5	0.698	0.639	0.755	0.048	6.90%	20.2%	541/775	0.664	24.1%
50			5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100			5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	0.832	0.897	0.839	0.890	0.916					
1			0.581	Outlier	0.574	0.716	0.652					
10			0.665	0.697	0.755	0.639	0.735					
50			0.000	0.000	0.000	0.000	0.000					
100			0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 12:34 (p 1 of 1)
Test Code/ID: 10-4882-0233/29523-4Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 25 Aug-17 16:00		Species: Arbacia punctulata			Sample Code: 29521-020		
End Date: 28 Aug-17 11:25		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 4		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	21	155	129	129	
0	D	2	18	155	139	136	
0	D	3	12	155	130	130	
0	D	4	5	155	138	138	
0	D	5	10	155	142	135	
0	L	1	4	155	125	125	
0	L	2	19	155	140	140	
0	L	3	14	155	114	113	
0	L	4	30	155	143	143	
0	L	5	26	155	123	122	
1		1	9	155	116	115	
1		2	23	155	126	125	
1		3	16	155	111	111	
1		4	13	155	128	125	
1		5	2	155	120	115	
10		1	24	155	105	103	
10		2	3	155	128	114	
10		3	6	155	120	110	
10		4	7	155	121	102	
10		5	28	155	101	88	
50		1	27	155	0	0	
50		2	17	155	0	0	
50		3	15	155	0	0	
50		4	8	155	0	0	
50		5	1	155	0	0	
100		1	11	155	0	0	
100		2	20	155	0	0	
100		3	25	155	0	0	
100		4	22	155	0	0	
100		5	29	155	0	0	

CETIS Summary Report

Report Date: 29 Aug-17 13:42 (p 1 of 1)
Test Code: 29523-4Ap | 10-4882-0233

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Batch ID:	05-4045-2670			Test Type:	Survival-Development			Analyst:	Amanda Komarek			
Start Date:	25 Aug-17 16:00			Protocol:	EPA/600/R-95/136 (1995)			Diluent:	CLIS Reference Site			
Ending Date:	28 Aug-17 11:25			Species:	Arbacia punctulata			Brine:	Generic commercial salts			
Duration:	67h			Source:	In-House Culture			Age:	<4			
Sample ID:	01-1364-5250			Code:	29521-020			Client:	AECOM			
Sample Date:	25 Aug-17 11:13			Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	25 Aug-17 11:13			Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	5h			Station:	Composite 4							
Point Estimate Summary												
Analysis ID	Endpoint		Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
15-1933-2440	Proportion Normal		Linear Interpolation (ICPIN)				EC50	17.9	15.9	20	5.577	
03-2769-0764	Proportion Normal		Trimmed Spearman-Kärber				EC50	15.2	14	16.5	6.567	✓
19-0640-6544	Proportion Survived		Linear Interpolation (ICPIN)				EC50	19.6	17.1	21.4	5.09	
10-3978-6191	Proportion Survived		Trimmed Spearman-Kärber				EC50	18.3	17	19.7	5.459	
Proportion Normal Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.862	0.831	0.893	0.832	0.890	0.011	0.025	2.93%	0.00%	
0	L	5	0.830	0.729	0.931	0.729	0.923	0.036	0.081	9.81%	3.74%	
1		5	0.763	0.711	0.814	0.716	0.806	0.019	0.041	5.43%	11.53%	
10		5	0.667	0.587	0.747	0.568	0.735	0.029	0.064	9.61%	22.60%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Survived Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.875	0.829	0.921	0.832	0.916	0.017	0.037	4.26%	0.00%	
0	L	5	0.832	0.735	0.930	0.735	0.923	0.035	0.079	9.45%	4.87%	
1		5	0.775	0.719	0.832	0.716	0.826	0.020	0.045	5.84%	11.36%	
10		5	0.742	0.650	0.834	0.652	0.826	0.033	0.074	9.97%	15.19%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Normal Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.877	0.839	0.890	0.871						
0	L	0.806	0.903	0.729	0.923	0.787						
1		0.742	0.806	0.716	0.806	0.742						
10		0.665	0.735	0.710	0.658	0.568						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						
Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.832	0.897	0.839	0.890	0.916						
0	L	0.806	0.903	0.735	0.923	0.794						
1		0.748	0.813	0.716	0.826	0.774						
10		0.677	0.826	0.774	0.781	0.652						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						

CETIS Analytical Report

Report Date: 29 Aug-17 13:41 (p 1 of 2)
 Test Code: 29523-4Ap | 10-4882-0233

Echinoid Embryo-Larval Survival and Development Test						EnviroSystems, Inc.					
Analysis ID: 03-2769-0764		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:40		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 01-1364-5250		Code: 29521-020		Client: AECOM							
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 4									
Trimmed Spearman-Kärber Estimates											
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL				
Control Threshold	0.138	11.53%	1.18	0.018	15.2	14	16.5				
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.78	2.82	0.0594	No Outliers Detected						
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc.-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.862	0.832	0.890	0.025	2.93%	0.0%	668/775	0.862	0.0%
1		5	0.763	0.716	0.806	0.041	5.43%	11.5%	591/775	0.763	11.5%
10		5	0.667	0.568	0.735	0.064	9.61%	22.6%	517/775	0.667	22.6%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Normal Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.877	0.839	0.890	0.871					
1		0.742	0.806	0.716	0.806	0.742					
10		0.665	0.735	0.710	0.658	0.568					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:41 (p 1 of 2)
Test Code: 29523-4Ap | 10-4882-0233

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.													
Analysis ID: 15-1933-2440		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3																			
Analyzed: 29 Aug-17 13:40		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes																			
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek																			
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site																			
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts																			
Duration: 67h		Source: In-House Culture		Age: <4																			
Sample ID: 01-1364-5250		Code: 29521-020		Client: AECOM																			
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation																			
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF																					
Sample Age: 5h		Station: Composite 4																					
Linear Interpolation Options																							
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method													
Log(X+1)		Linear		234830		200		Yes		Two-Point Interpolation													
Residual Analysis																							
Attribute		Method				Test Stat		Critical		P-Value		Decision(α:5%)											
Extreme Value		Grubbs Extreme Value Test				2.78		2.82		0.0594		No Outliers Detected											
Point Estimates																							
Level		%		95% LCL		95% UCL		TU		95% LCL		95% UCL											
EC50		17.9		15.9		20		5.577		5.002		6.298											
Proportion Normal Summary																							
				Calculated Variate(A/B)						Isotonic Variate													
Conc-%		Code		Count		Mean		Min		Max		Std Dev		CV%		%Effect		A/B		Mean		%Effect	
0		D		5		0.862		0.832		0.890		0.025		2.93%		0.0%		668/775		0.862		0.0%	
1				5		0.763		0.716		0.806		0.041		5.43%		11.5%		591/775		0.763		11.5%	
10				5		0.667		0.568		0.735		0.064		9.61%		22.6%		517/775		0.667		22.6%	
50				5		0.000		0.000		0.000		0.000				100.0%		0/775		0		100.0%	
100				5		0.000		0.000		0.000		0.000				100.0%		0/775		0		100.0%	
Proportion Normal Detail																							
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4		Rep 5											
0		D		0.832		0.877		0.839		0.890		0.871											
1				0.742		0.806		0.716		0.806		0.742											
10				0.665		0.735		0.710		0.658		0.568											
50				0.000		0.000		0.000		0.000		0.000											
100				0.000		0.000		0.000		0.000		0.000											

CETIS Analytical Report

Report Date: 29 Aug-17 13:41 (p 2 of 2)
Test Code: 29523-4Ap | 10-4882-0233

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 10-3978-6191		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 13:40		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek							
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 67h		Source: In-House Culture		Age: <4							
Sample ID: 01-1364-5250		Code: 29521-020		Client: AECOM							
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 4									
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.125	11.36%	1.26	0.0159	18.3	17	19.7			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.16	2.82	0.5979	No Outliers Detected				
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.875	0.832	0.916	0.037	4.26%	0.0%	678/775	0.875	0.0%
1		5	0.775	0.716	0.826	0.045	5.84%	11.4%	601/775	0.775	11.4%
10		5	0.742	0.652	0.826	0.074	9.97%	15.2%	575/775	0.742	15.2%
50		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/775	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.832	0.897	0.839	0.890	0.916					
1		0.748	0.813	0.716	0.826	0.774					
10		0.677	0.826	0.774	0.781	0.652					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 13:41 (p 2 of 2)
Test Code: 29523-4Ap | 10-4882-0233

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.													
Analysis ID: 19-0640-6544		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3																			
Analyzed: 29 Aug-17 13:40		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes																			
Batch ID: 05-4045-2670		Test Type: Survival-Development		Analyst: Amanda Komarek																			
Start Date: 25 Aug-17 16:00		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site																			
Ending Date: 28 Aug-17 11:25		Species: Arbacia punctulata		Brine: Generic commercial salts																			
Duration: 67h		Source: In-House Culture		Age: <4																			
Sample ID: 01-1364-5250		Code: 29521-020		Client: AECOM																			
Sample Date: 25 Aug-17 11:13		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation																			
Receipt Date: 25 Aug-17 11:13		Source: New Haven Harbor FNP -2017 (NHHarborF																					
Sample Age: 5h		Station: Composite 4																					
Linear Interpolation Options																							
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method													
Log(X+1)		Linear		53302		200		Yes		Two-Point Interpolation													
Residual Analysis																							
Attribute		Method				Test Stat		Critical		P-Value		Decision(α:5%)											
Extreme Value		Grubbs Extreme Value Test				2.16		2.82		0.5979		No Outliers Detected											
Point Estimates																							
Level		%		95% LCL		95% UCL		TU		95% LCL		95% UCL											
EC50		19.6		17.1		21.4		5.09		4.665		5.859											
Proportion Survived Summary																							
				Calculated Variate(A/B)						Isotonic Variate													
Conc-%		Code		Count		Mean		Min		Max		Std Dev		CV%		%Effect		A/B		Mean		%Effect	
0		D		5		0.875		0.832		0.916		0.037		4.26%		0.0%		678/775		0.875		0.0%	
1				5		0.775		0.716		0.826		0.045		5.84%		11.4%		601/775		0.775		11.4%	
10				5		0.742		0.652		0.826		0.074		9.97%		15.2%		575/775		0.742		15.2%	
50				5		0.000		0.000		0.000		0.000				100.0%		0/775		0		100.0%	
100				5		0.000		0.000		0.000		0.000				100.0%		0/775		0		100.0%	
Proportion Survived Detail																							
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4		Rep 5											
0		D		0.832		0.897		0.839		0.890		0.916											
1				0.748		0.813		0.716		0.826		0.774											
10				0.677		0.826		0.774		0.781		0.652											
50				0.000		0.000		0.000		0.000		0.000											
100				0.000		0.000		0.000		0.000		0.000											

PREPARATION of DILUTIONS

STUDY: 29523

CLIENT: AECOM

DILUENT: CLDS (Reference Water)

SPECIES: *A. punctulata*

TEST: Suspended Particulate Phase (SPP)

Diluent: CLDS	Composite #: 1		Composite #: 2		Composite #: 3		Composite #: 4	
Concentration	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)
Lab	0	1000	0	1,000	0	1,000	0	1,000
CLDS	0		0		0		0	
1 %	10		10		10		10	
10 %	100		100		100		100	
50 %	500		500		500		500	
100 %	1000	↓	1,000	↓	1,000	↓	1,000	↓
Initial	CFS		CFS		CFS		CFS	
Date	08/22/17		08/22/17		08/22/17		08/22/17	
Time	1630		1515		1550		1630	
If salinity adjustment is necessary, please see <i>A. bahia</i> / <i>M. beryllina</i> paper work for record of adjustment.								
Ammonia pulled on 100% SPP and Controls	Start	End (Ap)	Start	End (Ap)	Start	End (Ap)	Start	End (Ap)

Diluent: CLDS	Composite #: 5		Composite #: 6		Composite #: 7		Composite #: 8	
Concentration	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)	Vol Eff (mL)	Final Vol (mL)
Lab	0	1,000	0	1,000	0	1,000	0	1,000
CLDS	0		0		0		0	
1 %	10		10		10		10	
10 %	100		100		100		100	
50 %	500		500		500		500	
100 %	1,000	↓	1,000	↓	1,000	↓	1,000	↓
Initial	CFS		CFS		CFS		CFS	
Date	08/23/17		08/23/17		08/23/17		08/23/17	
Time	1600		1615		1630		1640	
If salinity adjustment is necessary, please see <i>A. bahia</i> / <i>M. beryllina</i> paper work for record of adjustment.								
Ammonia pulled on 100% SPP and Controls	Start	End (Ap)	Start	End (Ap)	Start	End (Ap)	Start	End (Ap)

(E10) 9/5/17 Dilutions prepared for 1st attempt at Round 1 Assay

EMBRYO WORKSHEET

DATE: 08/23/17

ESI STUDY: 29523

CLIENT: AECOM

PROJECT: New Haven

Eggs Collected @: 1610

Pre-assay fertilization check: 92/100

ANALYST: GRS

Sperm Collected @: 1605

A mated subsample of egg+sperm must achieve $\geq 90\%$ fertilization in order to be used in testing.

Egg Stock Suspension Count:

Take 1mL of egg stock suspension and using a glass graduated cylinder dilute with seawater to a final volume of 100 mL. Count a subsample of the diluted suspension to get an estimate of the egg concentration. The diluted suspension should have 40 - 50 eggs/mL, (which would represent an egg concentration of 4,000 - 5,000 in the stock suspension.)

Egg Count (per mL) of diluted suspension: 4000

Sperm Stock Suspension Count:

1. Hemocytometer Count (D):

2. Hemocytometer Count (D):

Average Count (D):

Sperm Concentrations:

Solution D X 40 E

Solution D X 20 E

Solution D X 5 E

$\times 10^4$

=

Once added to the egg stock, the final sperm concentration should be $1 \times 10^5 - 1 \times 10^7$ in solution D. E

Solution A =

Solution B =

Solution C =

Sperm Count (per mL):

mL of Eggs to Add:

mL of Sperm to Add:

Gametes mixed @:

Gametes must be mixed within 1 hour of collection.

Calculated Embryo Stock

Concentration (per mL):

Calculated Embryo Stock (mL)

needed per chamber:

The test concentration should be 15 - 30 embryos per mL.

Add calculated amount of embryo stock to a surrogate chamber, gently mix, then count a 5mL aliquot.

Embryo Concentration Check:

If the check concentration is acceptable, then proceed with embryo addition to the test.

Volume Embryo Stock (mL)

added to test solutions:

Embryos Added to Test

Solutions @:

INITIAL COUNTS:

Embryos/ 5 mL

SURROGATE A

SURROGATE B

SURROGATE C

Mean:

Organism Lot ID:

Mean per mL:

Round 2

ENVIROSYSTEMS, INCORPORATED
REFERENCE TOXICANT ASSAY
***Arbacia punctulata* Developmental ASSAY**

MONTH/YEAR:

TOXICANT: Copper

ORGANISM: *Arbacia punctulata*

LOT:

Concentration	DO (mg/L)	pH (SU)	SALINITY (ppt)
Lab Control			
1 ppb			
5 ppb			
10 ppb			
50 ppb			
100 ppb			

Water Quality Station	
DO meter #	
DO probe #	
pH meter #	
pH probe #	
Salinity meter	
Initials	
Date	

SPERM DILUTIONS:

Hemocytometer Count E:

215

X

 $10^4 = \text{Sperm Solution D} = 2.15 \times 10^6$

Sperm Concentrations:

Solution E

X

 $40 = \text{Solution A} = 8.60 \times 10^7$ SPM

Solution E

X

 $20 = \text{Solution B} = 4.30 \times 10^7$ SPM

Solution E

X

 $5 = \text{Solution C} = 1.08 \times 10^7$ SPM

FINAL COUNTS:

Final Sperm Count: 2.15×10^6

Final Egg Count: 4600

TEST TIMES:

Sperm Collected: 1605

Eggs Collected: 1610

Gametes Mixed: 1636

Gametes Added to Test: 1636 1730

210 GR50831
Data sheet not
provided so ref tox
sheet was used as
template.

SURROGATES:

	Embryos / 5 ml	Embryos / ml
Surrogate A	158	32
Surrogate B	172	34
Surrogate C	147	29
Mean	477 159	32

157/136

137/109

120/93

Copper Reference Toxicant Stock Solution:

Saltwater ID:

Arbacia punctulata Survival / Development Assay

ESI Study: 29523

Assay Start: 8/23/17 16:30

Client: HECOM

Assay End: 8/25/17 16:30

Count Date: 8/26/17 AKS

Initials: AKS

8/26/17
8/27/17

8/27/17 AKS

Treatment	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
Lab Control Water	125/111	112/108	130/121	110/108	128/124
CLDS Reference Water	109/100	116/108	134/128	115/113	114/112
Composite 5 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	157/155	138/136	115/114	121/121	144/144
10%	105/3	132/2	97/0	130/0	117/0
50%	16/0	26/0	15/0	21/0	10/0
100%	0/0	0/0	0/0	0/0	0/0
Composite 6 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	98/95	132/127	147/139	123/120	118/116
10%	33/0	68/0	29/0	65/0	60/0
50%	36/0	26/0	22/0	15/0	33/0
100%	38/0	52/0	44/0	40/0	29/0
Composite 7 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	127/13	109/41	112/39	121/48	136/54
10%	33/0	68/0	29/0	65/0	60/0
50%	43/0	61/0	43/0	45/0	37/0
100%	51/0	45/0	58/0	43/0	46/0
Composite 8 Elutriate	REP A Alive / Normal	REP B Alive / Normal	REP C Alive / Normal	REP D Alive / Normal	REP E Alive / Normal
1%	135/118	112/104	130/128	107/91	126/118
10%	82/0	109/0	110/0	119/0	126/0
50%	24/0	44/0	52/0	41/0	57/0
100%	32/0	33/0	32/0	47/0	43/0

Rep A
33/0
AKS
8/27/17

AKS
8/27/17

Comp 7
10%

143/1 97/0 87/0 86/0 93/0

SUSPENDED PHASE ACUTE BIOASSAY DATA SUMMARY

Study #:	29523	Client:	AECOM	Project:	New Haven, CT
Test Species:	<i>A. punctulata</i>	Lot ID:	99A _F AR0062017	Diluent:	CLDS

DAILY WATER QUALITIES

Concentration		Dissolved Oxygen (mg/L)		pH (SU)		Temperature (C)		Salinity (ppt)	
		0 hr	END 48 hr	0 hr	END 48 hr	0 hr	END 48 hr	0 hr	END 48 hr
Controls	Lab	7.6	5.8	8.12 ^{30.2} _{29.5} ^{CFS} _{5/12}	7.82	21	20	30.2	30
	CLDS	7.5	5.7	7.87 ^{28.0} _{28.0} ^{CFS} _{5/12}	7.81	21	20	28.0	29
Composite #5	1 %	7.7	5.8	7.85	7.86	21	20	27.5 ^{28.7} _{28.1} ^{CFS} _{5/12}	28 ²⁹ ₂₉ ^{CFS} _{5/12}
	10 %	7.8	5.8	7.87	7.97	21	20	28.1	29
	50 %	7.8	5.8	7.91	8.09	21	20	28.8	29
	100 %	7.8	5.6	7.89	8.13	21	20	29.8	31
Composite #6	1 %	7.7	6.6	7.86	8.03	21	20	27.9	28
	10 %	7.8	6.5	7.87	8.02	21	20	28.1	29
	50 %	7.8	6.2	7.89	8.09	21	20	28.9	30
	100 %	7.8	6.1	7.88	8.13	21	20	30.0	30
Composite #7	1 %	7.6	6.1	7.90	7.95	21	20	27.9	28
	10 %	7.7	6.2	7.88	7.97	21	20	28.1	29
	50 %	7.8	6.2	7.90	8.11	21	20	28.6	29
	100 %	7.5	6.2	7.88	8.14	21	20	29.9	30
Composite #8	1 %	7.7	6.4	7.89	8.02	21	20	27.9	28
	10 %	7.8	6.6	7.88	8.05	21	20	28.2	28
	50 %	7.8	6.7	7.91	8.13	21	20	28.8	29
	100 %	7.8	6.8	7.91	8.16	21	20	29.9	30
Initials		CFS	UB	RECORD OF METERS USED				Water Quality Station # <u>1</u>	
Date		08/23/17	8/25/17	Exposure				DO Meter #	24
Time		1630	1515 ^{08/23/17} 1440					DO Probe #	95
Incub. Temp		21	21	Water Quality Station #		0	24	pH Meter #	1097
Comments: 48 hr temps not taken. Data is		Thermometer or Probe #		YSI30D	YSI30D	pH Probe #		147	
from A. bahia assay at 48hrs 8/25/17 UB		Initial		CFS	UB	Salinity Meter		YSI30D	

CETIS Test Data Worksheet

Report Date: 29 Aug-17 13:58 (p 1 of 1)
Test Code/ID: 13-5311-2647/29523-5Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 23 Aug-17 16:30		Species: Arbacia punctulata			Sample Code: 29521-010		
End Date: 25 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 23 Aug-17 10:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 5		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	5	159	109	100	
0	D	2	24	159	116	108	
0	D	3	19	159	134	128	
0	D	4	14	159	115	113	
0	D	5	2	159	114	112	
0	L	1	27	159	125	111	
0	L	2	4	159	112	108	
0	L	3	11	159	130	121	
0	L	4	6	159	110	108	
0	L	5	1	159	129	124	
1		1	25	159	157	155	
1		2	20	159	138	136	
1		3	18	159	115	114	
1		4	30	159	121	121	
1		5	26	159	144	144	
10		1	22	159	105	3	
10		2	28	159	132	2	
10		3	10	159	97	0	
10		4	7	159	130	0	
10		5	16	159	117	0	
50		1	15	159	16	0	
50		2	29	159	26	0	
50		3	21	159	15	0	
50		4	12	159	21	0	
50		5	23	159	10	0	
100		1	17	159	0	0	
100		2	8	159	0	0	
100		3	13	159	0	0	
100		4	3	159	0	0	
100		5	9	159	0	0	

CETIS Summary Report

Report Date: 29 Aug-17 09:53 (p 1 of 1)
Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Batch ID:	18-0026-3205		Test Type:	Survival-Development				Analyst:	Kenneth Simon		
Start Date:	23 Aug-17 16:30		Protocol:	EPA/600/R-95/136 (1995)				Diluent:	CLIS Reference Site		
Ending Date:	25 Aug-17 16:30		Species:	Arbacia punctulata				Brine:	Generic commercial salts		
Duration:	48h		Source:	In-House Culture				Age:	<4		
Sample ID:	19-6036-1069		Code:	29521-010				Client:	AECOM		
Sample Date:	23 Aug-17 10:20		Material:	Dredged Sediment Suspended Particulate				Project:	Dredged Sediment Evaluation		
Receipt Date:	23 Aug-17 10:20		Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	6h		Station:	Composite 5							
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
18-2305-9428	Proportion Normal	Linear Interpolation (ICPIN)				EC50	3.72	3.67	3.8	26.85	
19-7766-7632	Proportion Normal	Linear Interpolation (ICPIN)				EC50	3.72	3.67	3.77	26.86	
03-3840-3058	Proportion Normal	Spearman-Kärber				EC50	3.21	3.17	3.25	31.11	
06-3472-8270	Proportion Normal	Spearman-Kärber				EC50	3.21	3.17	3.25	31.12	✓
19-7354-1182	Proportion Survived	Linear Interpolation (ICPIN)				EC50	24.1	19.4	27.8	4.148	
11-9170-4790	Proportion Survived	Spearman-Kärber				EC50	22.5	21.4	23.5	4.454	
Proportion Normal Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.706	0.626	0.785	0.629	0.805	0.029	0.064	9.10%	0.00%
0	L	5	0.719	0.660	0.779	0.679	0.780	0.021	0.048	6.62%	-1.96%
1		5	0.843	0.712	0.973	0.717	0.975	0.047	0.105	12.45%	-19.43%
10		5	0.006	0.000	0.017	0.000	0.019	0.004	0.009	141.42%	99.11%
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
Proportion Survived Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.740	0.665	0.814	0.686	0.843	0.027	0.060	8.13%	0.00%
0	L	5	0.762	0.688	0.837	0.692	0.818	0.027	0.060	7.86%	-3.06%
1		5	0.849	0.715	0.983	0.723	0.987	0.048	0.108	12.67%	-14.80%
10		5	0.731	0.611	0.850	0.610	0.830	0.043	0.096	13.16%	1.19%
50		5	0.111	0.063	0.158	0.063	0.164	0.017	0.038	34.70%	85.03%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
0	L	0.698	0.679	0.761	0.679	0.780					
1		0.975	0.855	0.717	0.761	0.906					
10		0.019	0.013	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
0	L	0.786	0.704	0.818	0.692	0.811					
1		0.987	0.868	0.723	0.761	0.906					
10		0.660	0.830	0.610	0.818	0.736					
50		0.101	0.164	0.094	0.132	0.063					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:52 (p 1 of 3)
Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 06-3472-8270			Endpoint: Proportion Normal				CETIS Version: CETISv1.9.3				
Analyzed: 29 Aug-17 9:28			Analysis: Untrimmed Spearman-Kärber				Official Results: Yes				
Batch ID: 18-0026-3205			Test Type: Survival-Development				Analyst: Kenneth Simon				
Start Date: 23 Aug-17 16:30			Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site				
Ending Date: 25 Aug-17 16:30			Species: Arbacia punctulata				Brine: Generic commercial salts				
Duration: 48h			Source: In-House Culture				Age: <4				
Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.294	0.00%	0.507	0.0027	3.21	3.17	3.25			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.05	2.82	0.0158	Outlier Detected				
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.774	0.0%
1		5	0.843	0.717	0.975	0.105	12.50%	-19.4%	670/795	0.774	0.0%
10		5	0.006	0.000	0.019	0.009	141.00%	99.1%	5/795	0.00629	99.2%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.975	0.855	0.717	0.761	0.906					
10		0.019	0.013	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:52 (p 2 of 3)
 Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 03-3840-3058			Endpoint: Proportion Normal				CETIS Version: CETISv1.9.3				
Analyzed: 29 Aug-17 9:28			Analysis: Untrimmed Spearman-Kärber				Official Results: Yes				
Batch ID: 18-0026-3205			Test Type: Survival-Development				Analyst: Kenneth Simon				
Start Date: 23 Aug-17 16:30			Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site				
Ending Date: 25 Aug-17 16:30			Species: Arbacia punctulata				Brine: Generic commercial salts				
Duration: 48h			Source: In-House Culture				Age: <4				
Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.294	0.00%	0.507	0.00273	3.21	3.17	3.25			
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.758	0.0%
1		4	0.810	0.717	0.906	0.086	10.60%	-14.8%	515/636	0.758	0.0%
10		5	0.006	0.000	0.019	0.009	141.00%	99.1%	5/795	0.00629	99.2%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		Outlier	0.855	0.717	0.761	0.906					
10		0.019	0.013	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:50 (p 1 of 3)
Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 19-7766-7632		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 9:28		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	905407	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.05	2.82	0.0158	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	3.72	3.67	3.77	26.86	26.52	27.22					
Proportion Normal Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.774	0.0%
1		5	0.843	0.717	0.975	0.105	12.50%	-19.4%	670/795	0.774	0.0%
10		5	0.006	0.000	0.019	0.009	141.00%	99.1%	5/795	0.00629	99.2%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.975	0.855	0.717	0.761	0.906					
10		0.019	0.013	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:50 (p 2 of 3)
 Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 18-2305-9428		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 9:28		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	494939	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	3.72	3.67	3.8	26.85	26.32	27.25					
Proportion Normal Summary				Calculated Variate(A/B)						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.758	0.0%
1		4	0.810	0.717	0.906	0.086	10.60%	-14.8%	515/636	0.758	0.0%
10		5	0.006	0.000	0.019	0.009	141.00%	99.1%	5/795	0.00629	99.2%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		Outlier	0.855	0.717	0.761	0.906					
10		0.019	0.013	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:52 (p 3 of 3)
Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 11-9170-4790		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 9:28		Analysis: Untrimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.26	0.00%	1.35	0.0102	22.5	21.4	23.5			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.79	2.82	0.0565	No Outliers Detected				
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.794	0.0%
1		5	0.849	0.723	0.987	0.108	12.70%	-14.8%	675/795	0.794	0.0%
10		5	0.731	0.610	0.830	0.096	13.20%	1.19%	581/795	0.731	8.0%
50		5	0.111	0.063	0.164	0.038	34.70%	85.0%	88/795	0.111	86.1%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.987	0.868	0.723	0.761	0.906					
10		0.660	0.830	0.610	0.818	0.736					
50		0.101	0.164	0.094	0.132	0.063					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 09:50 (p 3 of 3)
 Test Code: 29523-5Ap | 13-5311-2647

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 19-7354-1182		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 9:28		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	968228	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.79	2.82	0.0565	No Outliers Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	24.1	19.4	27.8	4.148	3.604	5.163					
Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.794	0.0%
1		5	0.849	0.723	0.987	0.108	12.70%	-14.8%	675/795	0.794	0.0%
10		5	0.731	0.610	0.830	0.096	13.20%	1.19%	581/795	0.731	8.0%
50		5	0.111	0.063	0.164	0.038	34.70%	85.0%	88/795	0.111	86.1%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.987	0.868	0.723	0.761	0.906					
10		0.660	0.830	0.610	0.818	0.736					
50		0.101	0.164	0.094	0.132	0.063					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 13:58 (p 1 of 1)
Test Code/ID: 15-2598-5713/29523-6Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 23 Aug-17 16:30		Species: Arbacia punctulata			Sample Code: 29521-012		
End Date: 25 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 6		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	24	159	109	100	
0	D	2	9	159	116	108	
0	D	3	1	159	134	128	
0	D	4	27	159	115	113	
0	D	5	28	159	114	112	
0	L	1	18	159	125	111	
0	L	2	19	159	112	108	
0	L	3	7	159	130	121	
0	L	4	2	159	110	108	
0	L	5	21	159	129	124	
1		1	30	159	98	95	
1		2	4	159	132	127	
1		3	15	159	147	139	
1		4	17	159	123	120	
1		5	13	159	118	116	
10		1	16	159	33	0	
10		2	22	159	68	0	
10		3	26	159	29	0	
10		4	6	159	65	0	
10		5	10	159	60	0	
50		1	20	159	36	0	
50		2	14	159	26	0	
50		3	25	159	22	0	
50		4	8	159	15	0	
50		5	11	159	33	0	
100		1	3	159	38	0	
100		2	23	159	52	0	
100		3	12	159	44	0	
100		4	29	159	40	0	
100		5	5	159	29	0	

CETIS Summary Report

Report Date: 29 Aug-17 10:13 (p 1 of 1)
Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Batch ID:	18-0026-3205		Test Type:	Survival-Development				Analyst:	Kenneth Simon		
Start Date:	23 Aug-17 16:30		Protocol:	EPA/600/R-95/136 (1995)				Diluent:	CLIS Reference Site		
Ending Date:	25 Aug-17 16:30		Species:	Arbacia punctulata				Brine:	Generic commercial salts		
Duration:	48h		Source:	In-House Culture				Age:	<4		
Sample ID:	15-3917-3224		Code:	29521-012				Client:	AECOM		
Sample Date:	23 Aug-17 11:00		Material:	Dredged Sediment Suspended Particulate				Project:	Dredged Sediment Evaluation		
Receipt Date:			Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	5h		Station:	Composite 6							
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
00-9169-0060	Proportion Normal	Binomial/Graphical				EC50	3.16	1	10	31.62	✓
14-9296-5144	Proportion Normal	Binomial/Graphical				EC50	3.16	1	10	31.62	✓
01-1871-9120	Proportion Normal	Linear Interpolation (ICPIN)				EC50	3.69	3.69	3.69	27.1	
14-7330-7968	Proportion Normal	Linear Interpolation (ICPIN)				EC50	3.69	3.33	3.69	27.1	
11-3827-4018	Proportion Survived	Linear Interpolation (ICPIN)				EC50	7.76	4.74	17.3	12.89	
02-9902-8918	Proportion Survived	Trimmed Spearman-Kärber				EC50	8.7	7.23	10.5	11.5	
Proportion Normal Summary											
Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.706	0.626	0.785	0.629	0.805	0.029	0.064	9.10%	0.00%
0	L	5	0.719	0.660	0.779	0.679	0.780	0.021	0.048	6.62%	-1.96%
1		5	0.751	0.624	0.877	0.597	0.874	0.046	0.102	13.56%	-6.42%
10		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
Proportion Survived Summary											
Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.740	0.665	0.814	0.686	0.843	0.027	0.060	8.13%	0.00%
0	L	5	0.762	0.688	0.837	0.692	0.818	0.027	0.060	7.86%	-3.06%
1		5	0.777	0.636	0.918	0.616	0.925	0.051	0.114	14.61%	-5.10%
10		5	0.321	0.176	0.465	0.182	0.428	0.052	0.117	36.34%	56.63%
50		5	0.166	0.100	0.232	0.094	0.226	0.024	0.053	31.98%	77.55%
100		5	0.255	0.190	0.321	0.182	0.327	0.024	0.053	20.72%	65.48%
Proportion Normal Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
0	L	0.698	0.679	0.761	0.679	0.780					
1		0.597	0.799	0.874	0.755	0.730					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					
Proportion Survived Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
0	L	0.786	0.704	0.818	0.692	0.811					
1		0.616	0.830	0.925	0.774	0.742					
10		0.208	0.428	0.182	0.409	0.377					
50		0.226	0.164	0.138	0.094	0.208					
100		0.239	0.327	0.277	0.252	0.182					

CETIS Analytical Report

Report Date: 29 Aug-17 10:12 (p 1 of 3)
Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 00-9169-0060			Endpoint: Proportion Normal				CETIS Version: CETISv1.9.3				
Analyzed: 29 Aug-17 10:06			Analysis: Binomial Method				Official Results: Yes				
Batch ID: 18-0026-3205			Test Type: Survival-Development				Analyst: Kenneth Simon				
Start Date: 23 Aug-17 16:30			Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site				
Ending Date: 25 Aug-17 16:30			Species: Arbacia punctulata				Brine: Generic commercial salts				
Duration: 48h			Source: In-House Culture				Age: <4				
Binomial/Graphical Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.294	0.00%	0.5	0	3.16	1	10			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.02	2.82	0.0192	Outlier Detected				
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.728	0.0%
1		5	0.751	0.597	0.874	0.102	13.60%	-6.42%	597/795	0.728	0.0%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.597	0.799	0.874	0.755	0.730					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 10:12 (p 2 of 3)
 Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 14-9296-5144		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:06		Analysis: Binomial Method		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Binomial/Graphical Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.294	0.00%	0.5	0	3.16	1	10			
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.747	0.0%
1		4	0.789	0.730	0.874	0.063	8.03%	-11.9%	502/636	0.747	0.0%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		Outlier	0.799	0.874	0.755	0.730					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 01 Sep-17 15:06 (p 1 of 1)
Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 14-7330-7968		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:06		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Sample ID: 15-3917-3224		Code: 29521-012		Client: AECOM							
Sample Date: 23 Aug-17 11:00		Material: Dredged Sediment Suspended Particulate		Project: Dredged Sediment Evaluation							
Receipt Date:		Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age: 5h		Station: Composite 6									
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1349940	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.02	2.82	0.0192	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	3.69	3.33	3.69	27.1	27.1	29.99					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.728	0.0%
1		5	0.751	0.597	0.874	0.102	13.60%	-6.42%	597/795	0.728	0.0%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.597	0.799	0.874	0.755	0.730					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 10:12 (p 1 of 2)
 Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 01-1871-9120		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:06		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	163876	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	3.69	3.69	3.69	27.1	27.1	27.1					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.747	0.0%
1		4	0.789	0.730	0.874	0.063	8.03%	-11.9%	502/636	0.747	0.0%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		Outlier	0.799	0.874	0.755	0.730					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 10:12 (p 3 of 3)
Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 02-9902-8918		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:06		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.26	27.78%	0.939	0.0401	8.7	7.23	10.5			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.17	2.82	0.5738	No Outliers Detected				
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.758	0.0%
1		5	0.777	0.616	0.925	0.114	14.60%	-5.1%	618/795	0.758	0.0%
10		5	0.321	0.182	0.428	0.117	36.30%	56.6%	255/795	0.321	57.7%
50		5	0.166	0.094	0.226	0.053	32.00%	77.6%	132/795	0.211	72.2%
100		5	0.255	0.182	0.327	0.053	20.70%	65.5%	203/795	0.211	72.2%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.616	0.830	0.925	0.774	0.742					
10		0.208	0.428	0.182	0.409	0.377					
50		0.226	0.164	0.138	0.094	0.208					
100		0.239	0.327	0.277	0.252	0.182					

CETIS Analytical Report

Report Date: 29 Aug-17 10:12 (p 2 of 2)
Test Code: 29523-6Ap | 15-2598-5713

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 11-3827-4018		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:06		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform		Y Transform		Seed		Resamples		Exp 95% CL		Method	
Log(X+1)		Linear		1296179		200		Yes		Two-Point Interpolation	
Residual Analysis											
Attribute		Method		Test Stat		Critical		P-Value		Decision(α:5%)	
Extreme Value		Grubbs Extreme Value Test		2.17		2.82		0.5738		No Outliers Detected	
Point Estimates											
Level		%		95% LCL		95% UCL		TU		95% LCL 95% UCL	
EC50		7.76		4.74		17.3		12.89		5.783 21.08	
Proportion Survived Summary											
				Calculated Variate(A/B)						Isotonic Variate	
Conc-%		Code		Count		Mean		Min		Max	
						Std Dev		CV%		%Effect	
A/B				Mean		%Effect					
0		D		5		0.740		0.686		0.843	
1				5		0.777		0.616		0.925	
10				5		0.321		0.182		0.428	
50				5		0.166		0.094		0.226	
100				5		0.255		0.182		0.327	
Proportion Survived Detail											
Conc-%		Code		Rep 1		Rep 2		Rep 3		Rep 4	
										Rep 5	
0		D		0.686		0.730		0.843		0.723	
1				0.616		0.830		0.925		0.774	
10				0.208		0.428		0.182		0.409	
50				0.226		0.164		0.138		0.094	
100				0.239		0.327		0.277		0.252	

CETIS Test Data Worksheet

Report Date: 29 Aug-17 13:58 (p 1 of 1)
Test Code/ID: 06-3183-5457/29523-7Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 23 Aug-17 16:30		Species: Arbacia punctulata			Sample Code: 29521-014		
End Date: 25 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 7		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	2	159	109	100	
0	D	2	21	159	116	108	
0	D	3	28	159	134	128	
0	D	4	6	159	115	113	
0	D	5	24	159	114	112	
0	L	1	11	159	125	111	
0	L	2	3	159	112	108	
0	L	3	9	159	130	121	
0	L	4	19	159	110	108	
0	L	5	22	159	129	124	
1		1	7	159	127	13	
1		2	8	159	109	41	
1		3	25	159	112	39	
1		4	1	159	121	48	
1		5	4	159	136	54	
10		1	29	159	143	1	
10		2	26	159	97	0	
10		3	13	159	87	0	
10		4	23	159	86	0	
10		5	10	159	93	0	
50		1	14	159	43	0	
50		2	17	159	61	0	
50		3	16	159	43	0	
50		4	5	159	45	0	
50		5	12	159	37	0	
100		1	27	159	51	0	
100		2	20	159	49	0	
100		3	30	159	58	0	
100		4	18	159	43	0	
100		5	15	159	46	0	

CETIS Summary Report

Report Date: 29 Aug-17 11:03 (p 1 of 1)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Batch ID:	18-0026-3205		Test Type: Survival-Development				Analyst:		Kenneth Simon			
Start Date:	23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)				Diluent:		CLIS Reference Site			
Ending Date:	25 Aug-17 16:30		Species: Arbacia punctulata				Brine:		Generic commercial salts			
Duration:	48h		Source: In-House Culture				Age:		<4			
Sample ID:	04-6121-0446		Code: 29521-014				Client:		AECOM			
Sample Date:	23 Aug-17 09:20		Material: Dredged Sediment Suspended Particulate				Project:		Dredged Sediment Evaluation			
Receipt Date:			Source: New Haven Harbor FNP -2017 (NHHarborF									
Sample Age:	7h		Station: Composite 7									
Point Estimate Summary												
Analysis ID	Endpoint		Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
01-3980-1862	Proportion Normal		Linear Interpolation (ICPIN)				EC50	0.791	0.642	0.949	126.4	
09-0716-6369	Proportion Normal		Linear Interpolation (ICPIN)				EC50	0.701	0.523	0.959	142.7	✓
02-4705-7158	Proportion Normal		Regression: 3P Log-Logistic				EC50	0.777	0.639	0.943	128.8	
11-1092-5912	Proportion Normal		Regression: 3P Log-Logistic				EC50	0.863	0.778	0.958	115.9	
17-8588-6085	Proportion Survived		Linear Interpolation (ICPIN)				EC50	32.2	23.9	42.6	3.103	
19-3061-0683	Proportion Survived		Linear Interpolation (ICPIN)				EC50	35.1	25.6	45.4	2.847	
08-4790-7036	Proportion Survived		Regression: 3P Log-Logistic				EC50	46.4	32.6	66	2.157	
09-9400-1946	Proportion Survived		Regression: 3P Log-Logistic				EC50	41	30	56	2.437	
Proportion Normal Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.706	0.626	0.785	0.629	0.805	0.029	0.064	9.10%	0.00%	
0	L	5	0.719	0.660	0.779	0.679	0.780	0.021	0.048	6.62%	-1.96%	
1		5	0.245	0.123	0.368	0.082	0.340	0.044	0.099	40.26%	65.24%	
10		5	0.001	0.000	0.005	0.000	0.006	0.001	0.003	223.61%	99.82%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Survived Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.740	0.665	0.814	0.686	0.843	0.027	0.060	8.13%	0.00%	
0	L	5	0.762	0.688	0.837	0.692	0.818	0.027	0.060	7.86%	-3.06%	
1		5	0.761	0.675	0.847	0.686	0.855	0.031	0.069	9.11%	-2.89%	
10		5	0.636	0.451	0.822	0.541	0.899	0.067	0.150	23.51%	13.95%	
50		5	0.288	0.218	0.358	0.233	0.384	0.025	0.057	19.67%	61.05%	
100		5	0.311	0.266	0.355	0.270	0.365	0.016	0.036	11.50%	57.99%	
Proportion Normal Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.629	0.679	0.805	0.711	0.704						
0	L	0.698	0.679	0.761	0.679	0.780						
1		0.082	0.258	0.245	0.302	0.340						
10		0.006	0.000	0.000	0.000	0.000						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						
Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.686	0.730	0.843	0.723	0.717						
0	L	0.786	0.704	0.818	0.692	0.811						
1		0.799	0.686	0.704	0.761	0.855						
10		0.899	0.610	0.547	0.541	0.585						
50		0.270	0.384	0.270	0.283	0.233						
100		0.321	0.308	0.365	0.270	0.289						

CETIS Analytical Report

Report Date: 01 Sep-17 15:10 (p 1 of 1)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 02-4705-7158			Endpoint: Proportion Normal			CETIS Version: CETISv1.9.3					
Analyzed: 29 Aug-17 11:01			Analysis: Nonlinear Regression (NLR)			Official Results: Yes					
Sample ID: 04-6121-0446			Code: 29521-014			Client: AECOM					
Sample Date: 23 Aug-17 09:20			Material: Dredged Sediment Suspended Particulate			Project: Dredged Sediment Evaluation					
Receipt Date:			Source: New Haven Harbor FNP -2017 (NHHarborF								
Sample Age: 7h			Station: Composite 7								
Non-Linear Regression Options											
Model Name and Function					Weighting Function			PTBS Function		X Trans	Y Trans
3P Log-Logistic: $\mu=\alpha/[1+[x/\delta]^{\gamma}]$					Binomial [$w=n/[p \cdot q]$]			Off [$\mu^*=\mu$]		None	None
Regression Summary											
Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)		
5	-54.5	116	119	0.9629	Yes	0.00438	3.49	0.9956	Non-Significant Lack of Fit		
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	0.777	0.639	0.943	128.8	106	156.4					
Regression Parameters											
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)				
α	0.706	0.0244	0.655	0.756	28.9	<1.0E-37	Significant Parameter				
γ	2.49	0.651	1.14	3.84	3.82	9.3E-04	Significant Parameter				
δ	0.777	0.0734	0.625	0.929	10.6	<1.0E-37	Significant Parameter				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Lack of Fit	0.022	0.011	2	0.00438	0.9956	Non-Significant					
Model	2170	722	3	316	<1.0E-37	Significant					
Pure Error	50.3	2.51	20								
Residual	50.3	2.29	22								
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Goodness-of-Fit	Pearson Chi-Sq GOF Test	50.3	33.9	5.4E-04	Significant Heterogeneity						
	Likelihood Ratio GOF Test	54.9	33.9	1.2E-04	Significant Heterogeneity						
Extreme Value	Grubbs Extreme Value Test	3.31	2.82	0.0034	Outlier Detected						
Variances	Mod Levene Equality of Variance	2.81	3.06	0.0633	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.78	0.92	1.1E-04	Non-Normal Distribution						
	Anderson-Darling A2 Normality Te	2.79	2.49	<1.0E-37	Non-Normal Distribution						
Proportion Normal Summary											
			Calculated Variate(A/B)								
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	5	0.706	0.629	0.805	0.029	0.064	9.10%	0.0%	561	795
1		5	0.245	0.082	0.340	0.044	0.099	40.30%	65.2%	195	795
10		5	0.001	0.000	0.006	0.001	0.003	224.00%	99.8%	1	795
50		5	0.000	0.000	0.000	0.000	0.000		100.0%	0	795
100		5	0.000	0.000	0.000	0.000	0.000		100.0%	0	795
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.082	0.258	0.245	0.302	0.340					
10		0.006	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 1 of 3)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Analysis ID: 11-1092-5912		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3								
Analyzed: 29 Aug-17 11:01		Analysis: Nonlinear Regression (NLR)		Official Results: Yes								
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon								
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site								
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts								
Duration: 48h		Source: In-House Culture		Age: <4								
Non-Linear Regression Options												
Model Name and Function						Weighting Function		PTBS Function		X Trans	Y Trans	
3P Log-Logistic: $\mu=\alpha/[1+(x/\delta)^{\gamma}]$						Binomial $[\omega=n/[p \cdot q]]$		Off $[\mu^*=\mu]$		None	None	
Regression Summary												
Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision(α :5%)			
5	-35.2	77.7	80	0.9842	Yes	0.00825	3.52	0.9918	Non-Significant Lack of Fit			
Point Estimates												
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC50	0.863	0.778	0.958	115.9	104.4	128.6						
Regression Parameters												
Parameter		Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α :5%)				
α		0.706	0.0162	0.672	0.739	43.5	<1.0E-37	Significant Parameter				
γ		2.6	0.433	1.69	3.5	5.99	6.1E-06	Significant Parameter				
δ		0.863	0.0449	0.77	0.956	19.2	<1.0E-37	Significant Parameter				
ANOVA Table												
Source		Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Lack of Fit		0.0183	0.00916	2	0.00825	0.9918	Non-Significant					
Model		2160	721	3	717	<1.0E-37	Significant					
Pure Error		21.1	1.11	19								
Residual		21.1	1.01	21								
Residual Analysis												
Attribute		Method		Test Stat	Critical	P-Value	Decision(α :5%)					
Goodness-of-Fit		Pearson Chi-Sq GOF Test		21.1	32.7	0.4525	Non-Significant Heterogeneity					
		Likelihood Ratio GOF Test		20.6	32.7	0.4832	Non-Significant Heterogeneity					
Variances		Mod Levene Equality of Variance		2.59	3.06	0.0792	Equal Variances					
Distribution		Shapiro-Wilk W Normality Test		0.84	0.917	0.0014	Non-Normal Distribution					
		Anderson-Darling A2 Normality Te		2.12	2.49	<1.0E-37	Non-Normal Distribution					
Proportion Normal Summary												
Conc-%		Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0		D	5	0.706	0.629	0.805	0.029	0.064	9.10%	0.0%	561	795
1			4	0.286	0.245	0.340	0.022	0.043	15.10%	59.4%	182	636
10			5	0.001	0.000	0.006	0.001	0.003	224.00%	99.8%	1	795
50			5	0.000	0.000	0.000	0.000	0.000		100.0%	0	795
100			5	0.000	0.000	0.000	0.000	0.000		100.0%	0	795
Proportion Normal Detail												
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0		D	0.629	0.679	0.805	0.711	0.704					
1			Outlier	0.258	0.245	0.302	0.340					
10			0.006	0.000	0.000	0.000	0.000					
50			0.000	0.000	0.000	0.000	0.000					
100			0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 1 of 4)
 Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 09-0716-6369		Endpoint: Proportion Normal				CETIS Version: CETISv1.9.3					
Analyzed: 29 Aug-17 10:39		Analysis: Linear Interpolation (ICPIN)				Official Results: Yes					
Batch ID: 18-0026-3205		Test Type: Survival-Development				Analyst: Kenneth Simon					
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site					
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata				Brine: Generic commercial salts					
Duration: 48h		Source: In-House Culture				Age: <4					
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	244441	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		3.6	2.82	4.1E-04	Outlier Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	0.701	0.523	0.959	142.7	104.3	191.3					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.706	0.0%
1		5	0.245	0.082	0.340	0.099	40.30%	65.2%	195/795	0.245	65.2%
10		5	0.001	0.000	0.006	0.003	224.00%	99.8%	1/795	0.00126	99.8%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.082	0.258	0.245	0.302	0.340					
10		0.006	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 2 of 4)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 01-3980-1862		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:39		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	2124643	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	0.791	0.642	0.949	126.4	105.4	155.7					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.706	0.0%
1		4	0.286	0.245	0.340	0.043	15.10%	59.4%	182/636	0.286	59.4%
10		5	0.001	0.000	0.006	0.003	224.00%	99.8%	1/795	0.00126	99.8%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		Outlier	0.258	0.245	0.302	0.340					
10		0.006	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 2 of 3)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 08-4790-7036		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 11:01		Analysis: Nonlinear Regression (NLR)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Non-Linear Regression Options											
Model Name and Function						Weighting Function		PTBS Function		X Trans	Y Trans
3P Log-Logistic: $\mu=\alpha/[1+[x/\delta]^y]$						Binomial [$w=n/[p \cdot q]$]		Off [$\mu^*=\mu$]		None	None
Regression Summary											
Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)		
14	-145	296	299	0.8504	Yes	4.14	3.49	0.0314	Significant Lack of Fit		
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	46.4	32.6	66	2.157	1.516	3.07					
Regression Parameters											
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)				
α	0.763	0.0323	0.696	0.831	23.6	<1.0E-37	Significant Parameter				
γ	0.891	0.198	0.479	1.3	4.49	1.8E-04	Significant Parameter				
δ	46.4	9.63	26.4	66.3	4.81	8.3E-05	Significant Parameter				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Lack of Fit	41.9	21	2	4.14	0.0314	Significant					
Model	6790	2260	3	348	<1.0E-37	Significant					
Pure Error	101	5.07	20								
Residual	143	6.52	22								
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Goodness-of-Fit	Pearson Chi-Sq GOF Test	143	33.9	<1.0E-37	Significant Heterogeneity						
	Likelihood Ratio GOF Test	157	33.9	1.2E-07	Significant Heterogeneity						
Extreme Value	Grubbs Extreme Value Test	3.08	2.82	0.0139	Outlier Detected						
Variances	Mod Levene Equality of Variance	0.612	3.06	0.6601	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.918	0.92	0.0473	Non-Normal Distribution						
	Anderson-Darling A2 Normality Te	0.593	2.49	0.1251	Normal Distribution						
Proportion Survived Summary											
			Calculated Variate(A/B)								
Conc.-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	5	0.740	0.686	0.843	0.027	0.060	8.13%	0.0%	588	795
1		5	0.761	0.686	0.855	0.031	0.069	9.11%	-2.89%	605	795
10		5	0.636	0.541	0.899	0.067	0.150	23.50%	13.9%	506	795
50		5	0.288	0.233	0.384	0.025	0.057	19.70%	61.1%	229	795
100		5	0.311	0.270	0.365	0.016	0.036	11.50%	58.0%	247	795
Proportion Survived Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.799	0.686	0.704	0.761	0.855					
10		0.899	0.610	0.547	0.541	0.585					
50		0.270	0.384	0.270	0.283	0.233					
100		0.321	0.308	0.365	0.270	0.289					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 3 of 3)
Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 09-9400-1946		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 11:01		Analysis: Nonlinear Regression (NLR)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Non-Linear Regression Options											
Model Name and Function						Weighting Function		PTBS Function		X Trans	Y Trans
3P Log-Logistic: $\mu=\alpha/[1+[x/\delta]^y]$						Binomial [$w=n/[p \cdot q]$]		Off [$\mu^*=\mu$]		None	None
Regression Summary											
Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)		
11	-104	216	218	0.9095	Yes	7.8	3.52	0.0034	Significant Lack of Fit		
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	41	30	56	2.437	1.784	3.328					
Regression Parameters											
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)				
α	0.766	0.0263	0.711	0.82	29.1	<1.0E-37	Significant Parameter				
γ	0.756	0.131	0.482	1.03	5.75	1.0E-05	Significant Parameter				
δ	41	7.76	24.9	57.2	5.29	3.0E-05	Significant Parameter				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Lack of Fit	35.5	17.8	2	7.8	0.0034	Significant					
Model	6210	2070	3	552	<1.0E-37	Significant					
Pure Error	43.3	2.28	19								
Residual	78.8	3.75	21								
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Goodness-of-Fit	Pearson Chi-Sq GOF Test	78.8	32.7	<1.0E-37	Significant Heterogeneity						
	Likelihood Ratio GOF Test	81.3	32.7	<1.0E-37	Significant Heterogeneity						
Variances	Bartlett Equality of Variance Test	2.98	9.49	0.5605	Equal Variances						
	Mod Levene Equality of Variance	0.768	3.06	0.5626	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.977	0.917	0.8247	Normal Distribution						
	Anderson-Darling A2 Normality Te	0.246	2.49	0.7831	Normal Distribution						
Proportion Survived Summary											
			Calculated Variate(A/B)								
Conc.-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	5	0.740	0.686	0.843	0.027	0.060	8.13%	0.0%	588	795
1		5	0.761	0.686	0.855	0.031	0.069	9.11%	-2.89%	605	795
10		4	0.571	0.541	0.610	0.016	0.033	5.72%	22.8%	363	636
50		5	0.288	0.233	0.384	0.025	0.057	19.70%	61.1%	229	795
100		5	0.311	0.270	0.365	0.016	0.036	11.50%	58.0%	247	795
Proportion Survived Detail											
Conc.-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.799	0.686	0.704	0.761	0.855					
10		Outlier	0.610	0.547	0.541	0.585					
50		0.270	0.384	0.270	0.283	0.233					
100		0.321	0.308	0.365	0.270	0.289					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 3 of 4)
 Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 19-3061-0683		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:39		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	434134	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.47	2.82	0.0011	Outlier Detected						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	35.1	25.6	45.4	2.847	2.204	3.909					
Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.75	0.0%
1		5	0.761	0.686	0.855	0.069	9.11%	-2.89%	605/795	0.75	0.0%
10		5	0.636	0.541	0.899	0.150	23.50%	13.9%	506/795	0.636	15.2%
50		5	0.288	0.233	0.384	0.057	19.70%	61.1%	229/795	0.299	60.1%
100		5	0.311	0.270	0.365	0.036	11.50%	58.0%	247/795	0.299	60.1%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.799	0.686	0.704	0.761	0.855					
10		0.899	0.610	0.547	0.541	0.585					
50		0.270	0.384	0.270	0.283	0.233					
100		0.321	0.308	0.365	0.270	0.289					

CETIS Analytical Report

Report Date: 29 Aug-17 11:03 (p 4 of 4)
 Test Code: 29523-7Ap | 06-3183-5457

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 17-8588-6085		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 10:39		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1398931	200	Yes	Two-Point Interpolation						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	32.2	23.9	42.6	3.103	2.345	4.191					
Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.75	0.0%
1		5	0.761	0.686	0.855	0.069	9.11%	-2.89%	605/795	0.75	0.0%
10		4	0.571	0.541	0.610	0.033	5.72%	22.8%	363/636	0.571	23.9%
50		5	0.288	0.233	0.384	0.057	19.70%	61.1%	229/795	0.299	60.1%
100		5	0.311	0.270	0.365	0.036	11.50%	58.0%	247/795	0.299	60.1%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.799	0.686	0.704	0.761	0.855					
10		Outlier	0.610	0.547	0.541	0.585					
50		0.270	0.384	0.270	0.283	0.233					
100		0.321	0.308	0.365	0.270	0.289					

CETIS Test Data Worksheet

Report Date: 29 Aug-17 13:59 (p 1 of 1)
Test Code/ID: 16-5765-6999/29523-8Ap

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.
Start Date: 23 Aug-17 16:30		Species: Arbacia punctulata			Sample Code: 29521-016		
End Date: 25 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)			Sample Source: New Haven Harbor FNP -2017		
Sample Date: 23 Aug-17 12:23		Material: Dredged Sediment Suspended Particulat			Sample Station: Composite 8		
Conc-%	Code	Rep	Pos	# Exposed	# Survived	# Normal	Notes
0	D	1	11	159	109	100	
0	D	2	27	159	116	108	
0	D	3	4	159	134	128	
0	D	4	17	159	115	113	
0	D	5	7	159	114	112	
0	L	1	29	159	125	111	
0	L	2	5	159	112	108	
0	L	3	14	159	130	121	
0	L	4	15	159	110	108	
0	L	5	3	159	129	124	
1		1	16	159	135	118	
1		2	18	159	112	104	
1		3	12	159	130	128	
1		4	28	159	107	91	
1		5	10	159	126	118	
10		1	1	159	82	0	
10		2	23	159	109	0	
10		3	9	159	110	0	
10		4	13	159	119	0	
10		5	20	159	126	0	
50		1	26	159	24	0	
50		2	21	159	44	0	
50		3	30	159	52	0	
50		4	24	159	41	0	
50		5	8	159	57	0	
100		1	22	159	32	0	
100		2	2	159	33	0	
100		3	25	159	32	0	
100		4	6	159	47	0	
100		5	19	159	43	0	

CETIS Summary Report

Report Date: 29 Aug-17 11:11 (p 1 of 1)
Test Code: 29523-8Ap | 16-5765-6999

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.		
Batch ID:	18-0026-3205			Test Type:	Survival-Development			Analyst:	Kenneth Simon			
Start Date:	23 Aug-17 16:30			Protocol:	EPA/600/R-95/136 (1995)			Diluent:	CLIS Reference Site			
Ending Date:	25 Aug-17 16:30			Species:	Arbacia punctulata			Brine:	Generic commercial salts			
Duration:	48h			Source:	In-House Culture			Age:	<4			
Sample ID:	15-5843-8317			Code:	29521-016			Client:	AECOM			
Sample Date:	23 Aug-17 12:23			Material:	Dredged Sediment Suspended Particulate			Project:	Dredged Sediment Evaluation			
Receipt Date:	23 Aug-17 12:23			Source:	New Haven Harbor FNP -2017 (NHHarborF							
Sample Age:	4h			Station:	Composite 8							
Point Estimate Summary												
Analysis ID	Endpoint		Point Estimate Method				Level	%	95% LCL	95% UCL	TU	✓
13-0643-5301	Proportion Normal		Linear Interpolation (ICPIN)				EC50	3.68	2.89	3.7	27.2	
21-4223-1242	Proportion Normal		Trimmed Spearman-Kärber				EC50	3.15	3.13	3.16	31.75	✓
09-2986-4731	Proportion Survived		Linear Interpolation (ICPIN)				EC50	33.8	25.6	43.9	2.955	
01-4436-7495	Proportion Survived		Trimmed Spearman-Kärber				EC50	34.8	30.8	39.3	2.874	
Proportion Normal Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.706	0.626	0.785	0.629	0.805	0.029	0.064	9.10%	0.00%	
0	L	5	0.719	0.660	0.779	0.679	0.780	0.021	0.048	6.62%	-1.96%	
1		5	0.703	0.590	0.816	0.572	0.805	0.041	0.091	12.91%	0.36%	
10		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
50		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
100		5	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%	
Proportion Survived Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	D	5	0.740	0.665	0.814	0.686	0.843	0.027	0.060	8.13%	0.00%	
0	L	5	0.762	0.688	0.837	0.692	0.818	0.027	0.060	7.86%	-3.06%	
1		5	0.767	0.674	0.861	0.673	0.849	0.034	0.075	9.82%	-3.74%	
10		5	0.687	0.556	0.817	0.516	0.792	0.047	0.105	15.32%	7.14%	
50		5	0.274	0.175	0.373	0.151	0.358	0.036	0.080	29.04%	62.93%	
100		5	0.235	0.180	0.291	0.201	0.296	0.020	0.045	18.96%	68.20%	
Proportion Normal Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.629	0.679	0.805	0.711	0.704						
0	L	0.698	0.679	0.761	0.679	0.780						
1		0.742	0.654	0.805	0.572	0.742						
10		0.000	0.000	0.000	0.000	0.000						
50		0.000	0.000	0.000	0.000	0.000						
100		0.000	0.000	0.000	0.000	0.000						
Proportion Survived Detail												
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	D	0.686	0.730	0.843	0.723	0.717						
0	L	0.786	0.704	0.818	0.692	0.811						
1		0.849	0.704	0.818	0.673	0.792						
10		0.516	0.686	0.692	0.748	0.792						
50		0.151	0.277	0.327	0.258	0.358						
100		0.201	0.208	0.201	0.296	0.270						

CETIS Analytical Report

Report Date: 29 Aug-17 11:11 (p 1 of 2)
 Test Code: 29523-8Ap | 16-5765-6999

Echinoid Embryo-Larval Survival and Development Test							EnviroSystems, Inc.				
Analysis ID: 21-4223-1242		Endpoint: Proportion Normal		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 11:09		Analysis: Trimmed Spearman-Kärber		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.294	0.36%	0.498	0.00106	3.15	3.13	3.16			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.79	2.82	0.0568	No Outliers Detected				
Proportion Normal Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.706	0.0%
1		5	0.703	0.572	0.805	0.091	12.90%	0.36%	559/795	0.703	0.36%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.742	0.654	0.805	0.572	0.742					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:10 (p 1 of 2)
 Test Code: 29523-8Ap | 16-5765-6999

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 13-0643-5301		Endpoint: Proportion Normal				CETIS Version: CETISv1.9.3					
Analyzed: 29 Aug-17 11:09		Analysis: Linear Interpolation (ICPIN)				Official Results: Yes					
Batch ID: 18-0026-3205		Test Type: Survival-Development				Analyst: Kenneth Simon					
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site					
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata				Brine: Generic commercial salts					
Duration: 48h		Source: In-House Culture				Age: <4					
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	1319743	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.79	2.82	0.0568	No Outliers Detected				
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	3.68	2.89	3.7	27.2	27.04	34.56					
Proportion Normal Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.706	0.629	0.805	0.064	9.10%	0.0%	561/795	0.706	0.0%
1		5	0.703	0.572	0.805	0.091	12.90%	0.36%	559/795	0.703	0.36%
10		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
50		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
100		5	0.000	0.000	0.000	0.000		100.0%	0/795	0	100.0%
Proportion Normal Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.629	0.679	0.805	0.711	0.704					
1		0.742	0.654	0.805	0.572	0.742					
10		0.000	0.000	0.000	0.000	0.000					
50		0.000	0.000	0.000	0.000	0.000					
100		0.000	0.000	0.000	0.000	0.000					

CETIS Analytical Report

Report Date: 29 Aug-17 11:11 (p 2 of 2)
Test Code: 29523-8Ap | 16-5765-6999

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 01-4436-7495			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 29 Aug-17 11:09			Analysis: Trimmed Spearman-Kärber				Official Results: Yes				
Batch ID: 18-0026-3205			Test Type: Survival-Development				Analyst: Kenneth Simon				
Start Date: 23 Aug-17 16:30			Protocol: EPA/600/R-95/136 (1995)				Diluent: CLIS Reference Site				
Ending Date: 25 Aug-17 16:30			Species: Arbacia punctulata				Brine: Generic commercial salts				
Duration: 48h			Source: In-House Culture				Age: <4				
Trimmed Spearman-Kärber Estimates											
Threshold Option		Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL			
Control Threshold		0.26	31.22%	1.54	0.0264	34.8	30.8	39.3			
Residual Analysis											
Attribute		Method		Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test		2.28	2.82	0.4144	No Outliers Detected				
Proportion Survived Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.753	0.0%
1		5	0.767	0.673	0.849	0.075	9.82%	-3.74%	610/795	0.753	0.0%
10		5	0.687	0.516	0.792	0.105	15.30%	7.14%	546/795	0.687	8.85%
50		5	0.274	0.151	0.358	0.080	29.00%	62.9%	218/795	0.274	63.6%
100		5	0.235	0.201	0.296	0.045	19.00%	68.2%	187/795	0.235	68.8%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.849	0.704	0.818	0.673	0.792					
10		0.516	0.686	0.692	0.748	0.792					
50		0.151	0.277	0.327	0.258	0.358					
100		0.201	0.208	0.201	0.296	0.270					

CETIS Analytical Report

Report Date: 29 Aug-17 11:10 (p 2 of 2)
 Test Code: 29523-8Ap | 16-5765-6999

Echinoid Embryo-Larval Survival and Development Test										EnviroSystems, Inc.	
Analysis ID: 09-2986-4731		Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3							
Analyzed: 29 Aug-17 11:09		Analysis: Linear Interpolation (ICPIN)		Official Results: Yes							
Batch ID: 18-0026-3205		Test Type: Survival-Development		Analyst: Kenneth Simon							
Start Date: 23 Aug-17 16:30		Protocol: EPA/600/R-95/136 (1995)		Diluent: CLIS Reference Site							
Ending Date: 25 Aug-17 16:30		Species: Arbacia punctulata		Brine: Generic commercial salts							
Duration: 48h		Source: In-House Culture		Age: <4							
Linear Interpolation Options											
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Log(X+1)	Linear	917029	200	Yes	Two-Point Interpolation						
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.28	2.82	0.4144	No Outliers Detected						
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC50	33.8	25.6	43.9	2.955	2.279	3.909					
Proportion Survived Summary											
			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	D	5	0.740	0.686	0.843	0.060	8.13%	0.0%	588/795	0.753	0.0%
1		5	0.767	0.673	0.849	0.075	9.82%	-3.74%	610/795	0.753	0.0%
10		5	0.687	0.516	0.792	0.105	15.30%	7.14%	546/795	0.687	8.85%
50		5	0.274	0.151	0.358	0.080	29.00%	62.9%	218/795	0.274	63.6%
100		5	0.235	0.201	0.296	0.045	19.00%	68.2%	187/795	0.235	68.8%
Proportion Survived Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	D	0.686	0.730	0.843	0.723	0.717					
1		0.849	0.704	0.818	0.673	0.792					
10		0.516	0.686	0.692	0.748	0.792					
50		0.151	0.277	0.327	0.258	0.358					
100		0.201	0.208	0.201	0.296	0.270					

STUDY: 29523
CLIENT: AECOM
PROJECT: New Haven Harbor FNP, Contract #W912WJ-17-D-0003
ASSAY: Suspended Particulate Phase Round 1
TASK: Ammonia Summary
METHOD: SM 4500-NH3 G

Ammonia								
Sample ID	Hour	ESI Code	Total	Unionized	QLimit	Units	Sampled	Analyzed
<u>Start <i>Americamysis bahia</i></u>								
Laboratory Control	00			0.0000				
CLDS Reference Site	00			0.0000				
Composite 1	00	29521-100	2.2	0.1101	0.1	mg/L as N	08/22/17	08/25/17 1542
Composite 2	00	29521-101	24	1.2329	0.5	mg/L as N	08/22/17	08/25/17 1542
Composite 3	00	29521-102	12	0.5287	0.1	mg/L as N	08/22/17	08/25/17 1542
Composite 4	00	29521-103	17	0.7813	0.1	mg/L as N	08/22/17	08/25/17 1542
<u>Start <i>Menidia beryllina</i></u>								
Laboratory Control	00			0.0000				
CLDS Reference Site	00			0.0000				
Composite 1	00	29523-100	1.8	0.0857	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 2	00	29523-101	20	0.8725	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 3	00	29523-102	12	0.4485	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 4	00	29523-103	15	0.5991	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
<u>Start <i>Arbacia punctulata</i></u>								
Laboratory Control	00			0.0000				
CLDS Reference Site	00			0.0000				
Composite 1	00	29523-100	1.8	0.0857	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 2	00	29523-101	20	0.8725	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 3	00	29523-102	12	0.4485	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
Composite 4	00	29523-103	15	0.5991	0.1	mg/L as N	08/25/17 1535	09/01/17 1110
<u>End <i>Americamysis bahia</i></u>								
Laboratory Control	96			0.0000				
CLDS Reference Site	96	29523-105	4.3	0.1199	0.1	mg/L as N	08/26/17 1500	09/01/17 1110
Composite 1	96	29523-106	4.5	0.1434	0.1	mg/L as N	08/26/17 1500	09/01/17 1110
Composite 2	96	29523-107	7.9	0.4465	0.1	mg/L as N	08/26/17 1500	09/01/17 1110
Composite 3	96	29523-108	7.4	0.3203	0.1	mg/L as N	08/26/17 1500	09/01/17 1110
Composite 4	96	29523-109	7.6	0.3592	0.1	mg/L as N	08/26/17 1500	09/01/17 1110
<u>End <i>Menidia beryllina</i></u>								
Laboratory Control	96	29523-128	3.8	0.1137	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
CLDS Reference Site	96	29523-129	3.9	0.1193	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
Composite 1	96	29523-130	4	0.1430	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
Composite 2	96	29523-131	8.7	0.4935	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
Composite 3	96	29523-132	7.5	0.3419	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
Composite 4	96	29523-133	6.9	0.3914	0.1	mg/L as N	08/29/17 1540	09/01/17 1110
<u>End <i>Arbacia punctulata</i></u>								
Laboratory Control	67	29523-122	0.22	0.0098	0.1	mg/L as N	08/29/17 1625	09/01/17 1110
CLDS Reference Site	67	29523-123	0.18	0.0079	0.1	mg/L as N	08/29/17 1625	09/01/17 1110
Composite 1	67	29523-124	1.8	0.1024	0.1	mg/L as N	08/29/17 1625	09/01/17 1110
Composite 2	67	29523-125	15	1.1255	0.1	mg/L as N	08/29/17 1625	09/01/17 1110
Composite 3	67	29523-126	10	0.7212	0.1	mg/L as N	08/29/17 1625	09/01/17 1110
Composite 4	67	29523-127	13	1.1110	0.1	mg/L as N	08/29/17 1625	09/01/17 1110

STUDY: 29523
CLIENT: AECOM
PROJECT: New Haven Harbor FNP, Contract #W912WJ-17-D-0003
ASSAY: Suspended Particulate Phase Round 2
TASK: Ammonia Summary
METHOD: SM 4500-NH3 G

Ammonia								
Sample ID	Hour	ESI Code	Total	Unionized	QLimit	Units	Sampled	Analyzed
<u>Start <i>Americamysis bahia</i> and <i>Menidia beryllina</i></u>								
Laboratory Control	00			0.0000				
CLDS Reference Site	00			0.0000				
Composite 5	00	29521-104	34	1.0876	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 6	00	29521-105	57	1.7831	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 7	00	29521-106	62	2.1203	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 8	00	29521-107	40	1.4301	2	mg/L as N	08/23/17 1200	08/25/17 1542
<u>Start <i>Arbacia punctulata</i></u>								
Laboratory Control	00			0.0000				
CLDS Reference Site	00			0.0000				
Composite 5	00	29521-104	34	1.0876	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 6	00	29521-105	57	1.7831	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 7	00	29521-106	62	1.9396	2	mg/L as N	08/23/17 1200	08/25/17 1542
Composite 8	00	29521-107	40	1.3378	2	mg/L as N	08/23/17 1200	08/25/17 1542
<u>End <i>Americamysis bahia</i></u>								
Laboratory Control	96	29523-110	4.4	0.1434	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
CLDS Reference Site	96	29523-111	4.5	0.1568	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 5	96	29523-112	11	0.6353	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 6 ^a	96	29523-113	36	1.6715	0.5	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 7 ^a	96	29523-114	19	0.9843	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 8	96	29523-115	19	1.0060	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
<u>End <i>Menidia beryllina</i></u>								
Laboratory Control	96	29523-116	4.2	0.1280	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
CLDS Reference Site	96	29523-117	4.4	0.1226	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 5	96	29523-118	12	0.7722	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 6 ^a	96	29523-119	12	0.4775	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 7 ^a	96	29523-120	15	0.5090	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
Composite 8	96	29523-121	12	0.6782	0.1	mg/L as N	08/27/17 1600	09/01/17 1110
<u>End <i>Arbacia punctulata</i> ^b</u>								
Laboratory Control	48			0.0000	0.1	mg/L as N		
CLDS Reference Site	48			0.0000	0.1	mg/L as N		
Composite 5	48			0.0000	0.1	mg/L as N		
Composite 6	48			0.0000	0.1	mg/L as N		
Composite 7	48			0.0000	0.1	mg/L as N		
Composite 8	48			0.0000	0.1	mg/L as N		

Notes:

^a There was complete mortality before 96 hours, therefore water quality measurements were not taken. The last measured pH and temperature values were used for unionized ammonia calculations instead. Due to the complete mortality that occurred prior to 96 hours, ammonia samples were collected from the 50% test concentration.

^b Due to an oversight, ammonia samples were not collected at the end of the *A. punctulata* assay.

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	NA, No SAP available. Methods followed per RIM requirements.
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	NA
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	NA, cores collected by prime contractor
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes, see revised COC
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes, see revised COC
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	NA
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA
20. Were corrective action forms provided for all non-conforming data?	NA
21. Were all the species-specific test conditions in Appendix V met?	Yes, except as noted for temperature and salinity.
22. Were the test-specific age requirements met for each test species?	Yes
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	Yes
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	Yes
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	Yes

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species	Yes, except as noted for temperature and salinity.	Round 1 <i>A. bahia</i> temperature and salinity outside of acceptable range.	Section 3.7 and Appendix A
Test species age	Age/health within guidelines for each species (Appendix V)	Yes		Appendix A
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No	Yes		Data Package (separate cover)
Water column toxicity test: Control mortality Control abnormality	$\leq 10\%$ mean $\leq 30\%$ mussel/oyster; $\leq 40\%$ clam larvae, $\leq 30\%$ sea urchin larvae	Yes		Appendix A
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	$\leq 10\%$ mean (no chamber $> 20\%$) See EPA (1994a) Section 9; Table 11.3	NA		

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

ASSAY REVIEW CHECKLIST

STUDY#: 29523

CLIENT: AECOM

PROJECT: New Haven Harbor FNP Contract # W912WJ-17-D-0003

ASSAY: Suspended Particulate Phase

Analyst Data Review	Date	Initials	Comments
Chains of Custody Complete	8/21/17	W	original Coc provided did not
Sample Receipt Complete	↓	W	capture all, samples submitted, Coc revised & resubmitted on 8/21.
Organism Culture Sheet(s)	8/29/17	AK	
Bench Sheets Complete (dates, times, initials, etc...)	8/29/17	AK	
Water Quality Data Complete	8/29/17	AK	
Weights Reported	8/29/17	AK	
Assay Acceptability Review	8/29/17	AK	

Technical Report Review	Date	Initials	Comments
Statistical Analysis			
Survival / Normality	8/30/17	AK	
Chemical	NA		
Statistical Analysis Reviewed	8/29/17 8/29/17	JTP CS (M) NR	
Data Acceptability Review	8/30/17	NR	
Support Documentation			
Temperature Data Logger	NA		
Daily WQ Data	9/1/17	NR	
Overlying and/or Pore Water Chemistry	9/5/17	NR	
Other Chemical Analysis Data	NA		
Draft Report	9/5/17	NR	Rev. 1 9/8/17 (NR)
Final Report Reviewed	9/5/17	W	Rev. 1 9/8/17 (W)
QA Audit/Review Complete			
Final Report Printed - PDF	9/5/17	NR	Rev. 1 9/8/17 (NR)
Report E-mailed / Faxed	9/5/17	NR	Rev. 1 9/8/17 (NR)
Report Logged Out	↓	↓	↓

**TOXICOLOGICAL EVALUATION
OF A PROPOSED DREDGE SEDIMENT:**

**New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut**

**New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021**

10 Day Solid Phase Evaluation

Prepared For:

AECOM
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Specific Studies 29519 & 29520
September 2017

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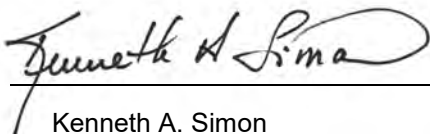
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LABORATORY STANDARDS STATEMENT

This study was performed by EnviroSystems, Incorporated at its facility in Hampton, New Hampshire. EnviroSystems' laboratory is accredited by the State of New Hampshire under the National Environmental Laboratory Accreditation (NELAC) program. Additionally, ESI is accredited under the Department of Defense (DoD) ELAP program, ISO/IEC 17025:2005, Certificate Number L2340. All testing conducted by EnviroSystems as part of this program was compliant with NELAC guidelines and standards. Additionally, this study was conducted in accordance with guidelines presented in the 2004 version of the New England District's Regional Implementation Manual (RIM) for Evaluation of Dredged Material Proposed for Disposal In New England Waters. Any deviations from specific elements of the RIM are detailed in the Protocol Deviation Section of this Report.

For EnviroSystems, Inc.



Kenneth A. Simon
Technical Director

September 27, 2017

Date

TOXICOLOGICAL EVALUATION OF A PROPOSED DREDGE SEDIMENT:

New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut

New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021

10 Day Solid Phase Evaluation

1.0 INTRODUCTION

As part of a comprehensive plan to reduce adverse environmental impacts of ocean dumping, Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 specifies that all sediments to be discharged into ocean waters must be evaluated to define their potential impact on existing benthic communities. The United States Environmental Protection Agency (US EPA) has determined that the most effective means to make such an assessment is through the use of bioassay tests, which provide a relatively direct estimate of potential impact.

This project was designed to evaluate the potential toxicity of sediments from the area of dredging proposed for the New Haven Harbor Federal Navigation Project (FNP) located in New Haven, Connecticut. Testing involved conduct of acute exposure 10 day solid phase assays using the mysid, *Americamysis bahia*, and the amphipod, *Leptocheirus plumulosus*. Testing followed procedures established by the US EPA and the United States Army Corps of Engineers (US ACE) for testing of dredged material. Procedures are presented in *Evaluation of Dredged Material Proposed for Ocean Disposal* (US EPA, US ACE 1991), *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual* (US EPA, US ACE 1998), and the *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters* (US EPA, CENAE, 2004).

2.0 MATERIALS AND METHODS

2.1 Sample Collection, Preservation and Storage

Sediment cores for toxicological analysis were collected by AECOM, Chelmsford, Massachusetts using vibracoring equipment from locations identified in the dredge footprint specified in the project Sampling and Analysis Plan (AECOM, 2017). Sediment samples were received under chain of custody in 5 gallon polyethylene buckets, and were composited based on the compositing scheme provided by AECOM's team. Reference site samples were also collected by AECOM from the Central Long Island Sound Disposal Site (CLDS). Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Prior to testing, samples were placed in a secure refrigerator and stored at a temperature of $4 \pm 2^{\circ}\text{C}$ until test initiation. Sample identification, collection and receipt information is summarized in Table 1. Sample compositing information is provided in Table 2.

Sediment for the laboratory control treatment was collected from the Hampton Estuary, Hampton, New Hampshire. The area is not known to receive any direct industrial inputs and has been used as a laboratory reference sediment in the testing of marine sediments for over 25 years. Overlying seawater was obtained from the Hampton Estuary. Water from the estuary has been used for the culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean.

2.2 Sediment Preparation

Before organisms were added to the test vessels, ammonia levels in the pore water were determined. If the pore water was found to contain an unionized ammonia level of ≥ 0.8 mg/L, then test initiation was delayed and the sediments were monitored until the ammonia levels achieved an acceptable level. Test chambers were renewed daily with 1 volume addition of overlying water during this pre-assay phase.

2.3 Bioassay Procedures

2.3.1 *A. bahia* 10 Day Solid Phase Evaluation

The 10 day exposure toxicity test was completed using *A. bahia* obtained from Aquatic Resource Organisms (ARO) of Hampton, New Hampshire. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. *A. bahia* used in the assay were ≤ 5 days old at the start of the test.

The assay was conducted in a static renewal mode. Test chambers were 1 liter beakers modified for static renewal testing. Each beaker contained approximately 2 cm of sediment and was filled to the 1 liter mark with seawater. The test chambers were allowed to stabilize for a minimum of 24 hours, or until overlying water unionized ammonia levels were within acceptable limits (≤ 0.6 mg/L at pH 7.9-8.0) prior to the addition of the test organisms. A total of 20 organisms were randomly selected from the lot received and added to each replicate. All treatment groups included 5 replicates. Each day during the test, chambers received 1 volume of new seawater having similar salinity and temperature as the overlying water in the vessels. This results in an approximate 50% renewal of overlying water. Water temperature was $20 \pm 1^\circ\text{C}$, and the salinity regimen was established at $30 \pm 2\text{‰}$. The photoperiod was set at 16:8 hours light:dark. Dissolved oxygen, pH, salinity, specific conductivity and temperature were measured daily in one replicate of each treatment and in all replicates on days 0 and 10. Ammonia levels were measured in the overlying water of a representative test chamber on days 0, 3 and 10. All test chambers were aerated throughout the assay and dissolved oxygen levels were maintained at ≥ 6.0 mg/L per ESI's protocol ($\geq 40\%$ saturation following RIM protocol). Water quality measurements were completed prior to water renewals. Test chambers were observed daily to ensure proper aeration and to note any test or treatment abnormalities. Any such observations were recorded on data sheets. Mysids were fed ≤ 24 hour old *Artemia* nauplii twice daily. After 10 days of exposure, the organisms were recovered for survival counts.

2.3.2 *L. plumulosus* 10 Day Solid Phase Evaluation

L. plumulosus were obtained from cultures maintained by ARO. Prior to use, test organisms were held for a minimum of 2 hours under temperature, salinity, and photoperiod conditions similar to those used in the assay. *L. plumulosus* were non-reproductive adults.

The assay was conducted in a static renewal mode. Test chambers were 1 liter beakers modified for static renewal testing. Each beaker contained approximately 2 cm of sediment and was filled to the 1 liter mark with seawater. The test chambers were allowed to stabilize for a minimum of 24 hours, or until pore water unionized ammonia levels were within acceptable limits (≤ 0.8 mg/L) prior to the addition of the test organisms. A total of 20 organisms were randomly selected from the lot received and added to each replicate. Each treatment group included 5 replicates and a surrogate test chamber that was used to obtain water qualities during the assay without disturbing the test animals. The surrogate chamber was treated the same as actual test chambers with the addition of animals and food, but was not used to determine endpoint data. Each day during the test, chambers received 1 volume of new seawater having similar salinity and temperature as the overlying water in the vessels. This results in an approximate 50% renewal of overlying water. Water temperature was $20 \pm 1^\circ\text{C}$, and the salinity regimen was established at $20 \pm 2\text{‰}$. The photoperiod was set at 16:8 hours light:dark. Dissolved oxygen, pH, salinity, specific conductivity and temperature were measured daily in the surrogate replicate of each treatment and in all replicates on days 0 and 10. Ammonia levels were measured in the overlying and pore water of the surrogate test chamber on days 0, 3 and 10. All test chambers were aerated throughout the assay and dissolved oxygen levels were

maintained at ≥ 6.0 mg/L per ESI's protocol ($\geq 40\%$ saturation following RIM protocol). Water quality measurements were completed prior to water renewals. Test chambers were observed daily to ensure proper aeration and to note any test or treatment abnormalities. Any such observations were recorded on data sheets. After 10 days of exposure, the organisms were recovered for survival counts.

2.4 Statistical Analysis

Survival data were analyzed using CETIS™ (Comprehensive Environmental Toxicity Information System) v1.9.3.0 software to determine significant differences between the project sediments and the reference site. Survival data were evaluated to determine homogeneity of sample variances and normality of distribution using appropriate statistics. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Pair-wise comparisons were based on the appropriate statistical analysis. Statistical difference was evaluated at $\alpha = 0.05$.

2.5 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Summaries of acute exposure reference toxicant assays conducted in support of this study are provided in Table 3.

3.0 RESULTS AND DISCUSSION

Table 4 provides a summary of assay acceptability and laboratory control performance. Tables 5 and 6 summarize the results of the statistical analysis for *Americamysis bahia* (mysid) and *Leptocheirus plumulosus* (amphipod), respectively. Tables 7 and 8 summarize water quality data collected during the *A. bahia* and *L. plumulosus* assays. Laboratory bench sheets, water quality data, and associated statistical support data are included in Appendix A.

3.1 *A. bahia* 10 Day Solid Phase Evaluation

Mean mysid survival in the laboratory control sediment was 92% with a coefficient of variation (CV) of 6%. Assay protocol requires that mean control survival be $\geq 90\%$. Based on this, the mysids were considered healthy and the overlying water was determined to have had no adverse impact on the outcome of the assay. Mean survival in the CLDS reference sediment was 98% with an associated CV of 5%.

Mean mysid survival in the site composites ranged from 74% (Composite 6) to 96% (Composite 8), and the statistical analyses show that there were negative effects on survival for mysids exposed to site Composite samples 1, 5 and 6 as compared to mysids exposed to the CLDS reference sediment. The difference in survival from the CLDS reference sediment was $<20\%$ for Composite samples 1 and 5, however it was $>20\%$ for Composite sample 6.

Temperature data collected during the daily water quality observations documented a mean value of 20.5°C with a range of 19.5 to 22.1°C . Confirmation temperature data collected on an hourly basis from a data logger documented a mean value of 20.8°C with a range of 19.6 to 29.6°C . Salinity levels ranged from 29.0 to 31.8‰ with a mean value of 30.1‰ . Test acceptability criteria requires a mean temperature of $20 \pm 1^{\circ}\text{C}$ with maximum temporary fluctuations of $20 \pm 3^{\circ}\text{C}$, and salinity within a range of $30 \pm 2\text{‰}$. See Section 3.3 for a discussion of the temperature deviation.

3.2 *L. plumulosus* 10 Day Solid Phase Evaluation

Mean amphipod survival in the laboratory control sediment was 94% with a CV of 2%. Assay protocol requires that mean control survival be $\geq 90\%$. Based on this, the amphipods were considered healthy and the overlying water was determined to have had no adverse impact on the outcome of the assay. Mean amphipod survival in the CLDS reference sediment was 95% with an associated CV of 5%.

Mean amphipod survival in the site composites ranged from 87% (Composite 8) to 96% (Composite 7). The statistical analyses show that there were no negative effects on survival for amphipods exposed to any of the site composites, except for Composite 8, as compared to amphipods exposed to the CLDS reference sediment. In Composite 8 however, the difference in survival from the CLDS reference sediment was <20%.

Temperature data collected during the daily water quality observations documented a mean value of 20.6°C with a range of 19.7 to 22.2°C. Confirmation temperature data collected on an hourly basis from a data logger documented a mean value of 20.8°C with a range of 19.6 to 29.6°C. Salinity levels ranged from 18.8 to 22.3‰ with a mean value of 19.6‰. Test acceptability criteria requires a mean temperature of 20±1°C with maximum temporary fluctuations of 20±3°C, and salinity within a range of 20±2‰. See Section 3.3 for a discussion of the temperature deviation.

3.3 Protocol Deviations

Review of data collected as part of the biological evaluation documented the following deviations from either the method protocol or ESI's Standard Operating Procedures:

Protocol requires that the assays be conducted at 20±1°C for the *A. bahia* and *L. plumulosus* assays. A temperature spike occurred beginning in the overnight hours at the outset of the assay, and the hourly temperatures exceeded the protocol range for approximately 16 hours reaching a maximum of 29.6°C at 5:37 AM on Saturday morning, September 2, 2017. The technician conducting the study assessed the temperature control unit of the water bath being used and determined that the unit was set to 19.5°C, with a thermostat reading of 19°C, indicating that the unit had malfunctioned. To correct the issue, the unit was disabled and room temperature adjusted to compensate. No further temperature deviations were noted for the remainder of the assay as demonstrated by the mean temperature of 20.8°C, which falls within the protocol range. The maximum temperature recorded also falls within the acceptable range for the species. It is the opinion of ESI's technical director that this deviation had no adverse impact on the outcome of the assay.

ESI's protocol requires that the dissolved oxygen (DO) levels are maintained at or above 6 mg/L, and the assays were aerated from the start to ensure this requirement was met. However, there were sporadic DO measurements that fell below 6 mg/L in both assays (1 measurement in the *L. plumulosus* assay and 4 measurements in the *A. bahia* assay). There were no notations indicating a reason for this, however it is most likely that aeration tubes had fallen out of the test vessels and were replaced on discovery. The mean DO levels were well above the threshold, indicating that overall the desired DO levels were maintained. Furthermore, both assays met the RIM protocol of ≥40% saturation. Therefore it is the opinion of ESI's technical director that this deviation had no adverse impact on the outcome of the assay.

Upon review of final ammonia data it was determined that the unionized ammonia levels in Composites 6 and 8 of the *L. plumulosus* assay were above the protocol threshold limit of 0.8 mg/L for assay initiation, with calculated unionized ammonia values of 1.64 and 0.86 mg/L, respectively. No significant effects occurred with organisms exposed to Composite 6, which had two times the level of unionized ammonia than the threshold. Although survival for Composite 8 was statistically different from the reference, there was only an 8% difference in mean survival for Composite 8 as compared to the reference site. The unionized ammonia levels in Composite 8 had reached 0.11 mg/L by test day 3, suggesting that organism exposures above the target threshold were limited. This rapid reduction in unionized ammonia levels, coupled with the fact that no significant effect occurred in Composite 6, suggest that effects in Composite 8 do not stem from ammonia toxicity. A colorimetric test has been used to determine total ammonia values during the pre-assay monitoring phase of testing, and given that this test is reliant on analyst interpretation, it likely was unclear that total ammonia values were high enough to result in a protocol excursion (there have been no known prior excursions from this protocol). A corrective action involving confirmatory ammonia analysis has been put in place to ensure that the target ammonia levels have been achieved prior to assay initiation.

4.0 SUMMARY

This program utilized protocols developed by the US EPA and the CENAE to assess the potential impact of the proposed dredge material collected from New Haven Harbor on the marine environment. Review of the data presented in Tables 5 and 6 documents that exposure to Composites 1, 5, 6 and 8 caused significant impacts on either *A. bahia* or *L. plumulosus* survival as compared to the CLDS reference sediment, however Composite 6 was the only sediment that caused >20% difference in survival (*A. bahia* only).

5.0 REFERENCES

- AECOM. 2017. Draft Laboratory Testing in Support of Environmental Assessment; Sampling & Environmental Testing – New Haven Harbor FNP [Sampling and Analysis Plan]. Chelmsford, Massachusetts. August 2017.
- US EPA, US ACE. 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual*. EPA-503/8-91/001. 204 pages.
- US EPA, US ACE. 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual*. EPA-823-B-98-004, February 1998.
- US EPA Region I, Corps of Engineers, New England District. 2004. *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters*. September 2004.

**Table 1. Sample Collection and Receipt Information. 10 Day Solid Phase Evaluation.
New Haven Harbor FNP. New Haven, Connecticut. September 2017.**

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-Z	29516-001	Site	Solid	08/12/17	1350	08/18/17	1300
NHH-Z	29516-002	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-P	29516-003	Site	Solid	08/12/17	0850	08/18/17	1300
NHH-P	29516-004	Site	Solid	08/09/17	1219	08/18/17	1300
NHH-L	29516-005	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-L	29516-006	Site	Solid	08/10/17	1300	08/18/17	1300
NHH-J	29516-007	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-J	29516-008	Site	Solid	08/10/17	1141	08/18/17	1300
NHH-F	29516-009	Site	Solid	08/16/17	1658	08/18/17	1300
NHH-F	29516-010	Site	Solid	08/11/17	1650	08/18/17	1300
NHH-M	29516-011	Site	Solid	08/13/17	1220	08/18/17	1300
NHH-M	29516-012	Site	Solid	08/08/17	1610	08/18/17	1300
NHH-B	29516-013	Hold ^a	Solid	08/11/17	1157	08/18/17	1300
NHH-W	29516-014	Site	Solid	08/09/17	1634	08/18/17	1300
NHH-W	29516-015	Site	Solid	08/15/17	0938	08/18/17	1300
NHH-O	29516-016	Site	Solid	08/14/17	1614	08/18/17	1300
NHH-O	29516-017	Site	Solid	08/08/17	1445	08/18/17	1300
NHH-Y	29516-018	Site	Solid	08/13/17	0820	08/18/17	1300
NHH-Y	29516-019	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-G	29516-020	Site	Solid	08/17/17	0934	08/18/17	1300
NHH-G	29516-021	Site	Solid	08/11/17	0837	08/18/17	1300
NHH-K	29516-022	Site	Solid	08/10/17	1409	08/18/17	1300
NHH-K	29516-023	Site	Solid	08/14/17	1232	08/18/17	1300
NHH-N	29516-024	Site	Solid	08/13/17	1515	08/18/17	1300
NHH-N	29516-025	Site	Solid	08/08/17	1305	08/18/17	1300
NHH-A	29516-026	Hold ^a	Solid	08/11/17	1340	08/18/17	1300
NHH-C	29516-027	Site	Solid	08/17/17	1213	08/18/17	1300
NHH-C	29516-028	Site	Solid	08/11/17	1033	08/18/17	1300
NHH-D	29516-029	Site	Solid	08/16/17	1443	08/18/17	1300
NHH-D	29516-030	Site	Solid	08/11/17	1507	08/18/17	1300
NHH-T	29516-031	Site	Solid	08/12/17	1220	08/18/17	1300
NHH-T	29516-032	Site	Solid	08/08/17	1734	08/18/17	1300
NHH-E	29516-033	Site	Solid	08/14/17	0832	08/18/17	1300
NHH-E	29516-034	Site	Solid	08/16/17	1230	08/18/17	1300
NHH-S	29516-035	Site	Solid	08/15/17	1158	08/18/17	1300
NHH-S	29516-036	Site	Solid	08/10/17	0955	08/18/17	1300
NHH-R	29516-037	Site	Solid	08/16/17	0829	08/18/17	1300
NHH-R	29516-038	Site	Solid	08/10/17	0832	08/18/17	1300
NHH-H	29516-039	Site	Solid	08/10/17	1548	08/18/17	1300

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-H	29516-040	Site	Solid	08/16/17	1027	08/18/17	1300
NHH-I	29516-041	Site	Solid	08/10/17	1746	08/18/17	1300
NHH-I	29516-042	Site	Solid	08/17/17	1627	08/18/17	1300
NHH-V	29516-043	Site	Solid	08/09/17	1745	08/18/17	1300
NHH-V	29516-044	Site	Solid	08/15/17	1646	08/18/17	1300
NHH-X	29516-045	Site	Solid	08/08/17	0922	08/18/17	1300
NHH-X	29516-046	Site	Solid	08/12/17	1600	08/18/17	1300
CLDS-Ref	29516-047	Reference	Solid	08/17/17	0800	08/18/17	1300
NHH-Q	29516-054	Site	Solid	08/09/17	1427	08/18/17	1300
NHH-U	29516-055	Site	Solid	08/09/17	0905	08/18/17	1300

Note:

^a Samples NHH-A and NHH-B were delivered to ESI but were not included in the compositing scheme per verbal communication from the client.

Table 2. Summary of Sample Compositing Information. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Composite ID	ESI Code	Components		Final Amount	Composite	
		Field ID	ESI Code		Date	Time
CLDS Reference Site ^a	29517-009	CLDS-Ref	29516-047	20 gal	08/21/17	1630
Composite 1	29517-001	NHH-C	29516-027	22 gal	08/21/17	0840
		NHH-C	29516-028			
Composite 2	29517-002	NHH-D	29516-029	26 gal	08/21/17	0950
		NHH-D	29516-030			
		NHH-E	29516-033			
		NHH-E	29516-034			
		NHH-F	29516-009			
		NHH-F	29516-010			
Composite 3	29517-003	NHH-G	29516-020	31 gal	08/21/17	1400
		NHH-G	29516-021			
		NHH-H	29516-039			
		NHH-H	29516-040			
		NHH-I	29516-041			
		NHH-I	29516-042			
Composite 4	29517-004	NHH-J	29516-007	23 gal	08/21/17	1445
		NHH-J	29516-008			
		NHH-K	29516-022			
		NHH-K	29516-023			
		NHH-L	29516-005			
		NHH-L	29516-006			

Composite ID	ESI Code	Components		Final Amount	Composite	
		Field ID	ESI Code		Date	Time
Composite 5	29517-005	NHH-M	29516-011	29 gal	08/21/17	1530
		NHH-M	29516-012			
		NHH-N	29516-024			
		NHH-N	29516-025			
		NHH-O	29516-016			
		NHH-O	29516-017			
Composite 6	29517-006	NHH-P	29516-003	28 gal	08/21/17	1205
		NHH-P	29516-004			
		NHH-Q	29516-054			
		NHH-R	29516-037			
		NHH-R	29516-038			
		NHH-S	29516-035			
Composite 7	29517-007	NHH-S	29516-036	31 gal	08/21/17	1540
		NHH-T	29516-031			
		NHH-T	29516-032			
		NHH-U	29516-055			
		NHH-V	29516-043			
		NHH-V	29516-044			
Composite 8	29517-008	NHH-W	29516-014	26 gal	08/21/17	1130
		NHH-W	29516-015			
		NHH-X	29516-045			
		NHH-X	29516-046			
		NHH-Y	29516-018			
		NHH-Y	29516-019			
		NHH-Z	29516-001			
		NHH-Z	29516-002			

Notes:

^a This sample was homogenized only.

Table 3. Summary of Reference Toxicant Data. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Date	Organism Lot	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>Americamysis bahia</i>						
08/31/17	03AbARO083017	96Hr LC-50	20.5	18.0	13.3 - 22.8	SDS (mg/L)
<i>Leptocheirus plumulosus</i>						
09/02/17	11LpARO083117	96Hr LC-50	0.8	1.1	0.0 - 3.3	Cadmium (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays.

Table 4. Summary of Laboratory Control Performance. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Endpoint / Measurement		Protocol Criteria	Unit	<i>A. bahia</i>	<i>L. plumulosus</i>
Mean Survival			%	92%	94%
		Laboratory Control \geq 90%	Protocol Met	Yes	Yes
Salinity	Minimum:	<i>A. bahia</i> - 28ppt	ppt	29.0	18.8
		<i>L. plumulosus</i> - 18ppt	Protocol Met	Yes	Yes
	Maximum:	<i>A. bahia</i> - 32ppt	ppt	31.8	22.3 ^a
		<i>L. plumulosus</i> - 22ppt	Protocol Met	Yes	Yes
Temperature		Mean: 20° ± 1°C	Daily / Hourly °C	20.5 / 20.8	20.6 / 20.8
		Minimum: 17°C	Daily / Hourly °C	19.5 / 19.6	19.7 / 19.6
		Maximum: 23°C	Daily / Hourly °C	22.1 / 29.6 ^b	22.2 / 29.6 ^b
			Protocol Met	Yes / No ^b	Yes / No ^b

Notes:

^a The value meets the protocol requirement when rounded to the whole number precision reflected in the method, therefore is not considered a protocol deviation.

^b Refer to Section 3.3 for a discussion of the deviation.

Table 5. Summary of Survival Data: *A. bahia*. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Day 10 Proportion Survived Summary - Mean Mysid Survival						
Sample ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	29520-000	5	92%	85%	100%	6%
CLDS Reference Site	29517-009	5	98%	90%	100%	5%
Composite 1	29517-001	5	86%	70%	100%	14%
Composite 2	29517-002	5	94%	90%	100%	4%
Composite 3	29517-003	5	90%	75%	100%	10%
Composite 4	29517-004	5	94%	85%	100%	7%
Composite 5	29517-005	5	90%	80%	100%	9%
Composite 6	29517-006	5	74%	50%	90%	21%
Composite 7	59517-007	5	90%	70%	100%	14%
Composite 8	29517-008	5	96%	90%	100%	6%

Day 10 Survival Statistical Analysis			Statistically Significant Difference, "<" as Compared to:	Difference in Survival as Compared to CLDS (29517-009)	
Sample ID	ESI Code	Mean	CLDS (29517-009)	>20%	
CLDS Reference Site	29517-009	98%	-	-	-
Composite 1	29517-001	86%	Yes	No	12%
Composite 2	29517-002	94%	No	No	4%
Composite 3	29517-003	90%	No	No	8%
Composite 4	29517-004	94%	No	No	4%
Composite 5	29517-005	90%	Yes	No	8%
Composite 6	29517-006	74%	Yes	Yes	24%
Composite 7	59517-007	90%	No	No	8%
Composite 8	29517-008	96%	No	No	2%

Table 6. Summary of Survival Data: *L. plumulosus*. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Day 10 Proportion Survived Summary - Mean Amphipod Survival						
Sample ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	29519-000	5	94%	90%	95%	2%
CLDS Reference Site	29517-009	5	95%	90%	100%	5%
Composite 1	29517-001	5	95%	85%	100%	6%
Composite 2	29517-002	5	91%	85%	100%	7%
Composite 3	29517-003	5	93%	85%	100%	6%
Composite 4	29517-004	5	96%	90%	100%	4%
Composite 5	29517-005	5	92%	85%	100%	6%
Composite 6	29517-006	5	89%	80%	95%	7%
Composite 7	59517-007	5	96%	90%	100%	6%
Composite 8	29517-008	5	87%	75%	90%	8%

Day 10 Survival Statistical Analysis			Statistically Significant Difference, "<" as Compared to:	Difference in Survival as Compared to CLDS (29517-009)	
Sample ID	ESI Code	Mean	CLDS (29517-009)	>20%	
CLDS Reference Site	29517-009	95%	-	-	-
Composite 1	29517-001	95%	No	No	0%
Composite 2	29517-002	91%	No	No	4%
Composite 3	29517-003	93%	No	No	2%
Composite 4	29517-004	96%	No	No	-1%
Composite 5	29517-005	92%	No	No	3%
Composite 6	29517-006	89%	No	No	6%
Composite 7	59517-007	96%	No	No	-1%
Composite 8	29517-008	87%	Yes	No	8%

Table 7. Summary of Overlying Water Quality Data: *A. bahia*. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
Laboratory Control	00	21.2	7.93	0.15	0.0053
CLDS Reference Site	00	21.2	7.95	<0.1	<0.0019
Composite 1	00	21.3	7.96	0.12	0.0046
Composite 2	00	21.3	7.98	1.9	0.0758
Composite 3	00	21.3	7.95	0.31	0.0116
Composite 4	00	21.3	8.00	2	0.0834
Composite 5	00	21.2	8.05	4.1	0.1895
Composite 6	00	21.2	7.98	7.4	0.2932
Composite 7	00	21.2	7.94	8.6	0.3118
Composite 8	00	21.2	8.05	4.3	0.1988
Laboratory Control	03	20.4	7.95	0.42	0.0147
CLDS Reference Site	03	20.4	7.98	0.18	0.0067
Composite 1	03	20.4	7.98	0.29	0.0109
Composite 2	03	20.4	8.03	1.2	0.0502
Composite 3	03	20.4	7.99	0.11	0.0042
Composite 4	03	20.4	8.02	0.58	0.0237
Composite 5	03	20.4	8.04	2.3	0.0984
Composite 6	03	20.4	8.00	5.1	0.1997
Composite 7	03	20.4	7.95	5.8	0.2033
Composite 8	03	20.4	8.10	3.1	0.1513
Laboratory Control	10	19.8	8.00	<0.1	<0.0019
CLDS Reference Site	10	19.8	8.06	<0.1	<0.0021
Composite 1	10	19.8	8.07	<0.1	<0.0022
Composite 2	10	19.8	8.14	0.17	0.0087
Composite 3	10	19.7	8.06	<0.1	<0.0021
Composite 4	10	19.7	8.23	<0.1	<0.0031
Composite 5	10	19.7	8.28	0.11	0.0076
Composite 6	10	19.7	8.08	0.11	0.0049
Composite 7	10	19.7	7.98	<0.1	<0.0018
Composite 8	10	19.7	8.06	0.15	0.0064

Note: Data in summary obtained from the “A” replicate of each treatment.

Table 8. Summary of Overlying Water Quality Data: *L. plumulosus*. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
Laboratory Control	00	21.3	7.82	<0.1	<0.0014
CLDS Reference Site	00	21.4	7.84	<0.1	<0.0015
Composite 1	00	21.3	7.84	<0.1	<0.0015
Composite 2	00	21.3	7.89	2	0.0653
Composite 3	00	21.3	7.91	0.37	0.0126
Composite 4	00	21.3	7.87	1.6	0.0500
Composite 5	00	21.3	7.99	3.6	0.1468
Composite 6	00	21.3	8.00	7.4	0.3085
Composite 7	00	21.3	7.91	8.4	0.2869
Composite 8	00	21.3	8.00	3.8	0.1584
Laboratory Control	03	20.4	8.03	0.17	0.0071
CLDS Reference Site	03	20.4	7.95	0.6	0.0210
Composite 1	03	20.4	7.93	0.14	0.0047
Composite 2	03	20.4	7.95	<0.1	<0.0018
Composite 3	03	20.4	7.93	<0.1	<0.0017
Composite 4	03	20.4	7.91	0.85	0.0273
Composite 5	03	20.4	8.00	2.5	0.0979
Composite 6	03	20.4	7.98	2.1	0.0787
Composite 7	03	20.4	7.87	1.1	0.0323
Composite 8	03	20.4	8.11	0.43	0.0214
Laboratory Control	10	19.8	7.99	<0.1	<0.0018
CLDS Reference Site	10	19.8	7.93	<0.1	<0.0016
Composite 1	10	19.8	7.97	<0.1	<0.0018
Composite 2	10	19.8	8.03	<0.1	<0.0020
Composite 3	10	19.8	8.00	<0.1	<0.0019
Composite 4	10	19.8	8.01	<0.1	<0.0019
Composite 5	10	19.8	8.14	<0.1	<0.0026
Composite 6	10	19.8	8.14	0.12	0.0061
Composite 7	10	19.8	7.93	0.19	0.0061
Composite 8	10	19.8	8.10	<0.1	<0.0023

Note: Data in summary are obtained from the “Surrogate” replicate of each treatment.

Table 9. Summary of Pore Water Quality Data: *L. plumulosus*. 10 Day Solid Phase Evaluation. New Haven Harbor FNP. New Haven, Connecticut. September 2017.

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
Laboratory Control	00	22	7.30	0.4	0.0036
CLDS Reference Site	00	22	7.53	<0.1	<0.0008
Composite 1	00	22	7.61	3	0.0549
Composite 2	00	22	7.65	6.7	0.1342
Composite 3	00	22	7.44	5.1	0.0635
Composite 4	00	22	7.61	7	0.1281
Composite 5	00	22	7.58	17	0.2907
Composite 6	00	22	7.72	70	1.6419
Composite 7	00	22	7.53	51	0.7788
Composite 8	00	22	7.63	45	0.8617
Laboratory Control	03	22	7.41	0.13	0.0015
CLDS Reference Site	03	22	7.54	<0.1	<0.0008
Composite 1	03	22	7.71	2.5	0.0573
Composite 2	03	22	7.56	2.8	0.0458
Composite 3	03	22	7.34	2	0.0198
Composite 4	03	22	7.41	1.9	0.0221
Composite 5	03	22	7.33	7.1	0.0688
Composite 6	03	22	7.46	38	0.4950
Composite 7	03	22	7.11	17.8	0.1043
Composite 8	03	22	7.29	13	0.1150
Laboratory Control	10	22	7.32	<0.1	<0.0005
CLDS Reference Site	10	22	7.46	<0.1	<0.0007
Composite 1	10	22	7.52	0.17	0.0025
Composite 2	10	22	7.09	<0.1	<0.0003
Composite 3	10	22	7.21	1.2	0.0088
Composite 4	10	22	7.14	1.4	0.0088
Composite 5	10	22	6.86	1.4	0.0046
Composite 6	10	22	7.26	0.95	0.0078
Composite 7	10	22	7.09	1.3	0.0073
Composite 8	10	22	6.95	11	0.0447

Note: Data in summary are obtained from the “Surrogate” replicate of each treatment.

APPENDIX A:
RAW DATA & STATISTICAL SUPPORT

Contents	Number of Pages
Study Number Record	1
Sample Receipt Logs and Chain of Custody Records	12
Composite Preparation Forms	9
Test Sediment Preparation Notes	1
<i>A. bahia</i> 10 Day Solid Phase Evaluation	
Pre-Assay Monitoring Record	1
Organism History Record; Organism Addition Record	2
Daily Record	1
Day 10 Recovery Bench Sheets	1
Survival Statistical Analysis Data Package	13
Sample Reading Order; Daily Water Quality Summary	7
Ammonia Calculations	1
<i>L. plumulosus</i> 10 Day Solid Phase Evaluation	
Pre-Assay Monitoring Record	1
Organism History Record; Organism Addition Record	2
Daily Record	1
Day 10 Recovery Bench Sheets	1
Survival Statistical Analysis Data Package	13
Sample Reading Order; Daily Water Quality Summary	8
Ammonia Calculations	2
Pore Water pH Record	2
Temperature Profile and Data	8
RIM QC Data Report Tables	2
Assay Review Checklists	1
Total Appendix Pages	90

STUDY NUMBER RECORD

Issue and complete this form for studies that will require multiple tasks and directly associated support studies. Issue consecutive study numbers at the start of the project to cover all potential elements of the project.

CLIENT: AECOM

CONTACT(S): Ryan McCarthy, Christine Archer, Maura Surprenant


PROJECT: New Haven Harbor Federal Navigation Project

CONTRACT #: W912WJ-17-D-0003

Species / Analysis Parameters:		STUDY:
Sample Receipt:		29516
Grain Size Analysis:		-
Composite Prep:		29517
Bulk Sediment Analysis:		29518
10 Day Assay:	<i>Leptocheirus plumulosus</i>	29519
	<i>Americamysis bahia</i>	29520
Elutriate Preparation:	Type:	29521
Elutriate Analysis:	Pentachlorophenol	Yes / No
	Trace Metals	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No
SPP Assays:	<i>Menidia beryllina</i>	
	<i>Americamysis bahia</i>	29523
	<i>Arbacia punctulata</i>	
Bioaccumulation Study:	<i>Macoma nasuta</i>	29524
	<i>Nereis virens</i>	29525
Tissue Analysis:	Trace Metals	Yes / No
	PAH Compounds	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 1

STUDY NO: 29516
 SDG No:
 Project: FNP: New Haven Harbor
 Delivered via: Client
 Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: NA
 Received By: JTP Logged into Lab by: KC 
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: No Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
 Number of COC Pages: 3
 COC Serial Number(s): See CoCs
 COC Complete: Yes Does the info on the COC match the samples? No
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? No
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: No Were samples received intact? (none broken or leaking) No
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
 Were all samples received? Yes Were VOC vials free of headspace? NA
 Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
See Chains of Custody						

Notes and qualifications:

-Majority of samples not listed on chains of custody based on container sampling information. Samples rejected and on hold until further notice.
 * Residual samples from grain size analyses received to include in final composites
 -Field ID NHH-Q and NHH-U presented on the associated chains of custody for this sample receipt document (ESI samples -054 and -055) were accurately denoted based on sample containers, and were not present on revised chains of custody issued by AECOM on 08/21/17.

Client/Project Name: USACE - NHH - FNP			Project Location: New Haven Harbor			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number:			Field Logbook No.:			[Grid for Analysis Requested]										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product				
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:																	
Signature: <i>[Signature]</i>			Send Results/Report to:													TAT:				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	[Grid for Analysis Requested]										Lab I.D.	Remarks
15 NHC-I	8/17/17	1430	X		5 gal	W	4°C	NA												
16 NHC-V	8/17/17	1528	X			W														
17 NHC-F	8/17/17	1300	X			W			[Grid for Analysis Requested]											6 carboys
18 CLOS-Ref-Top	8/17/17	1015	X			W														
19 CLOS-Ref-Mid			X			W														
20 CLOS-Ref-Bottom			X			W			[Grid for Analysis Requested]											2 carboys
21 NHH-C	8/11	1033	X		5 gal bucket	SD														
22 NHH-D	8/11	1507	X			SD														
23 NHH-E	8/11	0832	X			SD			[Grid for Analysis Requested]											4 buckets
24 NHH-F	8/11	1650	X			SD														
25 NHH-G	8/11	0837	X			SD														
26 NHH-H	8/10	1548	X			SD			[Grid for Analysis Requested]											4 buckets
27 NHH-I	8/10	1627	X			SD														
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/16/17			Received by: (Print Name)/(Affiliation) James T. Provencher ESI													Date: 08/18/17			Analytical Laboratory (Destination): ESI Notes: Discrepancies between most sample date & time and what is labeled on sample containers. Total container count not accurate. Conditions unacceptable for sample receipt & processing. - KC 8/18/17 1700
Signature: <i>[Signature]</i>			Time: 1300			Signature: <i>[Signature]</i>			Time: 1300											
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:			Signature:			Time:			Sample Shipped Via: AECOM Temp blank UPS FedEx Courier Other Yes No								
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:			Signature:			Time:											



CHAIN OF CUSTODY RECORD

29516

Page 2 of 3

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:		Field Logbook No.:		Dredge Sediment Soil										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:												Lab I.D.		Remarks	
Signature: 		Send Results/Report to:												TAT:			
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered									
14 NHH-J	8/15/17	1405	X	X	5g bucket	SD	4°C	NA	X								3 buckets
15 NHH-K	8/16/17	1409	X	X					X								2 buckets
19 NHH-L	8/15/17	1515	X	X					X								2 buckets
16 NHH-M	8/8/17	1610	X	X					X								3 buckets
17 NHH-N	8/13/17	1515	X	X					X								2 buckets
18 NHH-O	8/18/17	1445	X	X					X								3 buckets
20 NHH-P	8/9/17	1219	X	X					X								3 buckets
21 NHH-Q (E10 8/21 -054)	8/9/17	1427	X	X					X								4 buckets
22 NHH-R	8/10/17	0832	X	X					X								3 buckets
23 NHH-S	8/10/17	0955	X	X					X								2 buckets
24 NHH-T 1734 CSH	8/8/17	1707 CSH	X	X					X								4 buckets
25 NHH-U (E10 8/21 -055)	8/9/17	0905	X	X					X								5 buckets
26 NHH-V	8/15/17	1646	X	X					X								3 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher		Date: 08/18/17		Analytical Laboratory (Destination): E10 8/21 Notes: See page 1 of 3 Samples NHH-Q & NHH-U are accurate based on sample container and were not denoted on revised CoC.									
Signature:		Time: 1300		Signature:		Time: 1300		Sample Shipped Via: AECOM Temp blank									
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:											
Signature:		Time:		Signature:		Time:		UPS FedEx Courier Other Yes No									
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:											
Signature:		Time:		Signature:		Time:											



CHAIN OF CUSTODY RECORD


29516

Page 3 of 3

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:			Field Logbook No.:			<div style="writing-mode: vertical-rl; transform: rotate(180deg);">Dredge Sed Eval</div>										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:													Lab I.D.		Remarks	
Signature: 			Send Results/Report to:													TAT:			
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											
127 NHH-W •	8/15/17	0938		X	5 gal. bucket	SD	4°C	NA	X								2 buckets		
128 NHH-X •	8/13/17	1545		X	(	(	(	(	X								2 buckets
129 NHH-Y •	8/8/17	1037		X	(	(	(	(	X								3 buckets
130 NHH-Z •	8/8/17	1153		X	(	(	(	(	X								6 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencher ESI			Date: 08/18/17		Analytical Laboratory (Destination): ESI Notes: See page 1 of 3									
Signature:			Time: 1300		Signature:			Time: 1300											
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:		Signature:			Time:		Sample Shipped Via: AECOM Temp blank									
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:		Signature:			Time:		UPS FedEx Courier (Other) Yes (No)									

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 3

STUDY NO: 29516
 SDG No:
 Project: FNP: New Haven Harbor
 Delivered via: Client
 Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
 Received By: JTP Logged into Lab by: KC 
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: No Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
 Number of COC Pages: 5
 COC Serial Number(s): See CoCs
 COC Complete: Yes * Does the info on the COC match the samples? Yes *
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes *
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
 Were all samples received? Yes Were VOC vials free of headspace? NA
 Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-Z	29516-001	S	Hold:Composite	2x5 Gal.	4C	
NHH-Z	29516-002	S	Hold:Composite	4x5 Gal.	4C	
NHH-P	29516-003	S	Hold:Composite	1x5 Gal.	4C	
NHH-P	29516-004	S	Hold:Composite	2x5 Gal.	4C	
NHH-L	29516-005	S	Hold:Composite	1x5 Gal.	4C	
NHH-L	29516-006	S	Hold:Composite	1x5 Gal.	4C	
NHH-J	29516-007	S	Hold:Composite	2x5 Gal.	4C	
NHH-J	29516-008	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-009	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-010	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-011	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-012	S	Hold:Composite	1x5 Gal.	4C	
NHH-B	29516-013	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-014	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-015	S	Hold:Composite	1x5 Gal.	4C	
NHH-O	29516-016	S	Hold:Composite	2x5 Gal.	4C	
NHH-O	29516-017	S	Hold:Composite	1x5 Gal.	4C	
NHH-Y	29516-018	S	Hold:Composite	2x5 Gal.	4C	
NHH-Y	29516-019	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-020	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-021	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-022	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-023	S	Hold:Composite	1x5 Gal.	4C	


Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC 
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-N	29516-024	S	Hold:Composite	1x5 Gal.	4C	
NHH-N	29516-025	S	Hold:Composite	1x5 Gal.	4C	
NHH-A	29516-026	S	Hold:Composite	1x5 Gal.	4C	
NHH-C	29516-027	S	Hold:Composite	5x5 Gal.	4C	
NHH-C	29516-028	S	Hold:Composite	2x5 Gal.	4C	
NHH-D	29516-029	S	Hold:Composite	1x5 Gal.	4C	
NHH-D	29516-030	S	Hold:Composite	2x5 Gal.	4C	
NHH-T	29516-031	S	Hold:Composite	1x5 Gal.	4C	
NHH-T	29516-032	S	Hold:Composite	3x5 Gal.	4C	
NHH-E	29516-033	S	Hold:Composite	2x5 Gal.	4C	
NHH-E	29516-034	S	Hold:Composite	2x5 Gal.	4C	
NHH-S	29516-035	S	Hold:Composite	1x5 Gal.	4C	
NHH-S	29516-036	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-037	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-038	S	Hold:Composite	2x5 Gal.	4C	
NHH-H	29516-039	S	Hold:Composite	3x5 Gal.	4C	
NHH-H	29516-040	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-041	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-042	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-043	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-044	S	Hold:Composite	1x5 Gal.	4C	
NHH-X	29516-045	S	Hold:Composite	2x5 Gal.	4C	
NHH-X	29516-046	S	Hold:Composite	2x5 Gal.	4C	

Notes and qualifications: 29516-024 S Hold:Composite

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 3 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *kc*

Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____



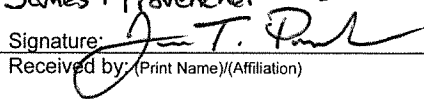
Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
CLDS-Ref	29516-047 S		Hold:Composite	4x5 Gal.	4C	
NHC-I	29516-048 W		Hold:Composite	7x5 Gal.	4C	
NHC-V	29516-049 W		Hold:Composite	12x5 Gal.	4C	
NHC-F	29516-050 W		Hold:Composite	6x5 Gal.	4C	
CLDS-Ref-Top	29516-051 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Mid	29516-052 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Bottom	29516-053 W		Hold:Composite	2x5 Gal.	4C	
NHH-Q **	29516-054 S		Hold:Composite	4x5 Gal.	4C	
NHH-U **	29516-055 S		Hold:Composite	5x5 Gal.	4C	

Notes and qualifications:

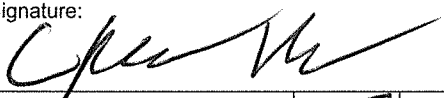
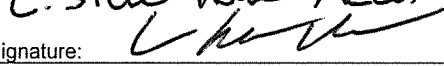
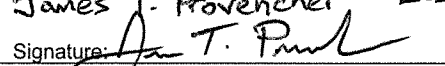
- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

** Samples denoted on original chain of custody, not on revised documents discussed above.

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type		Preservation		
Project Number:		Field Logbook No.:												Lab I.D.		Remarks		
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:		Dredge Sediment Eval (DSE)										Matrix Codes:				
Signature: 		Send Results/Report to:												TAT:				
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered										
NHH-Z	8/12	1350	X	X	5g bucket SD	4°C	NA	X										
NHH-Z	8/8	1153	X	X				X										
NHH-P	8/12	0850	X	X				X										
NHH-P	8/9	1219	X	X				X										
NHH-L	8/15	1405	X	X				X										
NHH-L	8/10	1300	X	X				X										
NHH-J	8/15	1405	X	X				X										
NHH-J	8/10	1141	X	X				X										
NHH-F	8/16	1658	X	X				X										
NHH-F	8/11	1600	X	X				X										
NHH-M	8/13	1220	X	X				X										
NHH-M	8/8	1610	X	X				X										
NHH-B	8/11	1157	X	X				X										
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination):										
Signature: 		Time: 1300		Signature: 		Time: 1300		COLs amended and revised on 8/21/17										
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		C. Steve Howe AECOM										
Signature:		Time:		Signature:		Time:		Rock - ESI 8/21/17										
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:										
Signature:		Time:		Signature:		Time:		Temp blank										
								UPS FedEx Courier Other Yes No										

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven Harbor			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°		
Project Number:			Field Logbook No.:													Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product		
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:																	
Signature: 			Send Results/Report to:																	TAT:
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	DSE										Lab I.D.	Remarks
NHH-W	8/9	1634		X	5g bucket	SD	40C	NA	X											1 bucket
NHH-W	8/15	0938		X					X											1 bucket
NHH-O	8/14	1614		X					X											2 buckets
NHH-O	8/8	1445		X					X											1 bucket
NHH-Y	8/13	0820		X					X											2 buckets
NHH-Y	8/8	1153		X					X											1 bucket
NHH-G	8/17	0934		X					X											1 bucket
NHH-G	8/11	0837		X					X											1 bucket
NHH-K	8/10	1409		X					X											1 bucket
NHH-K	8/14	1232		X					X											1 bucket
NHH-N	8/13	1315		X					X											1 bucket
NHH-N	8/8	1305		X					X											1 bucket
NHH-A	8/11	1340		X					X											1 bucket
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/18/17			Received by: (Print Name)/(Affiliation) James T. Provencer ESI			Date: 8/18/17			Analytical Laboratory (Destination): COCs amended and revised 8/21/17 AECOM Rich Bray - ESI 8/21/17								
Signature:			Time: 1300			Signature:			Time: 1300											
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:			Signature:			Time:											
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			Sample Shipped Via:						Temp blank		
Signature:			Time:			Signature:			Time:			UPS FedEx Courier Other						Yes No		

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven Harbor			Analysis Requested				Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°			
Project Number:			Field Logbook No.:												
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:												
Signature: 			Send Results/Report to:			TAT:									
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered					Lab I.D.	Remarks	
NHH-H	8/10	1548		X	5g bucket	SD	4°C	NA	X						3 buckets
NHH-B	8/16	1027		X					X						1 bucket
NHH-L	8/10	1746		X					X						1 bucket
NHH-I	8/17	1627		X					X						2 buckets
NHH-V	8/9	1745		X					X						2 buckets
NHH-V	8/15	1646		X					X						1 bucket
NHH-X	8/8	1153			CSH										2 buckets
NHH-X	8/8	0922		X	5g bucket	SD	4°C	NA	X						2 buckets
NHH-X	8/12	1600		X					X						2 buckets
CLOS-Ref	8/17	0800		X					X						4 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/18/17			Received by: (Print Name)/(Affiliation) James T. Provencher ESI			Date: 8/18/17			Analytical Laboratory (Destination): COCs amended and revised 8/21/17			
Signature: 			Time: 1300			Signature: 			Time: 1300						
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:						
Signature:			Time:			Signature:			Time:						
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:						
Signature:			Time:			Signature:			Time:						
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:						
Signature:			Time:			Signature:			Time:						
												Sample Shipped Via:			
												Temp blank			
												UPS FedEx Courier Other			
												Yes No			

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number:		Field Logbook No.:																		
Sampler (Print Name)/(Affiliation): C. Steve Hane AECOM		Chain of Custody Tape Nos.:																		
Signature: <i>[Signature]</i>		Send Results/Report to:		TAT:																
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHC-I	8/17/17	1430	X	X	5g carboys W	40C	NA	X												7 carboys
NHC-V	8/17	1528	X	X				X												12 carboys, 2 DI's*
NHC-F	8/17	1300	X	X				X												6 carboys
CLOS-Ref-Top	8/17	1015	X	X				X												2 carboys
CLOS-Ref-Mid	8/17	1015	X	X				X												2 carboys
CLOS-Ref-Bottom	8/17	1015	X	X				X												2 carboys
<div style="border: 1px solid black; width: 100%; height: 100%; transform: rotate(45deg); position: relative; margin: 0 auto;"> 3/18/17 48 49 50 52 53 15 3 </div>																				
Relinquished by: (Print Name)/(Affiliation) C. Steve Hane AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination):												
Signature: <i>[Signature]</i>		Time: 1300		Signature: <i>[Signature]</i>		Time: 1300		* water from a leaking carboy was transferred into to lab supplied distilled water containers												
Relinquished by: (Print Name)/(Affiliation) COCs amended and		Date:		Received by: (Print Name)/(Affiliation) C. Steve Hane AECOM		Date:														
Signature: revised 8/21/17		Time:		Signature: <i>[Signature]</i> - ESI 8/21/17		Time:														
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:										Temp blank		
Signature:		Time:		Signature:		Time:		UPS FedEx Courier Other										Yes No		

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 1
 Composite Lab ID.: 29517-001 Composite Final Volume: 22 gallons
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 0840
 Initials: BG/JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-C	29516-027	Solid	—	≈ 2.5 gal/bag	≈ 24.5 gal/bag	gray to black sediment with lots of shell hash
↓	↓ -028	↓	↓	↓	↓	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 2
 Composite Lab ID.: 29517-002 Composite Final Volume: ≈ 28^{gallons} ^{ESD 08/21}
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/11/17 1x1 gallon bucket
 Composite Prepared Time: 0950
 Initials: RF JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-D	29516-029 030	Solid	—	—	≈ 10 gallons	
NHH-E	↓ - 033 034	Solid	—	≈ 7 ^{gallons} ^{ESD 08/21}	≈ 7 gallons	
NHH-F	↓ - 009 010	Solid	—	—	≈ 10 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 3
 Composite Lab ID.: 29517-003 Composite Final Volume: 31 gal
 Composite Matrix: Solid Composite Container(s): 6x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon buckets
 Composite Prepared Time: 1400
 Initials: by JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-G	29516-020 -021	Solid	—	—	~9 gallons	
NHH-H	↓ -039 -040	Solid	—	—	~9 gallons	
NHH-I	✓ -041 -042	Solid	—	—	~1 gallon	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 4
 Composite Lab ID.: 29517-004 Composite Final Volume: 23 gallons
 Composite Matrix: Solid Composite Container(s): 505 gallon bucket
 Composite Prepared Date: 08/21/17 10 gallon bucket
 Composite Prepared Time: 1445
 Initials: BO/STP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-J	29516- ⁰⁰⁷ ₀₀₈	Solid	—	—	~8 gallons	
NHH-K	↓ - ⁰²² ₀₂₃	Solid	—	—	~8 gallons	
NHH-L	↓ - ⁰⁰⁵ ₀₀₆	Solid	—	—	~9.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 5
 Composite Lab ID.: 29517-005 Composite Final Volume: ≈ 29 gallons
 Composite Matrix: Solid Composite Container(s): 6 x 5 gallon
 Composite Prepared Date: 08/21/17 1 x 1 gallon
 Composite Prepared Time: 1530
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-M	29516-011	Solid	—	—	≈ 9.5g	
NHH-N	↓ -024 -025	Solid	—	—	≈ 9g	
NHH-O	↓ -016 -017	Solid	—	—	≈ 10.5g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 6
 Composite Lab ID.: 29517-006 Composite Final Volume: 28 gallons
 Composite Matrix: Solid Composite Container(s): 7x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 1205
 Initials: BS / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-P	29516-003 -004	Solid	—	—	~8.5 gallons	
NHH-Q	↓ -054	Solid	—	—	~14 gallons	
NHH-R	↓ -037 -038	Solid	—	—	~7 gallons	
NHH-S	↓ -035 -036	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 7
 Composite Lab ID.: 29517-007 Composite Final Volume: 31 gallons
 Composite Matrix: Solid Composite Container(s): 7 x 5 gallon buckets
 Composite Prepared Date: 08/21/17 1 x 1 gallon bucket
 Composite Prepared Time: 1540
 Initials: BGI JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-T	29516-031 -032	Solid	—	—	~9.5 gallons	
NHH-U	-055	Solid	—	—	~14.5 gallons	
NHH-V	-043 -044	Solid	—	—	~7 gallons	
NHH-W	-014 -015	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 8
 Composite Lab ID.: 29517-008 Composite Final Volume: ~26 gallons
 Composite Matrix: Solid Composite Container(s): 50 gallon buckets
 Composite Prepared Date: 08/21/17 100 gallon bucket
 Composite Prepared Time: 1130
 Initials: DW / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-X	29516-045 046	Solid	—	—	~9.5 gallons	
NHH-Y	↓ -018 019	Solid	—	—	~8.5 gallons	
NHH-Z	↓ -001 002	Solid	—	—	~11.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Homogenization Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: CLDS Reference Site
 Composite Lab ID.: 29517-009 Composite Final Volume: ≈ 20 gallons
 Composite Matrix: Solid Composite Container(s): 4x5 gallons
 Composite Prepared Date: 08/21/17 1x1 gallon
 Composite Prepared Time: 1630
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-CLDS	29516-047	Solid	—	few shells	≈ 20g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation <u>Ⓢ JTP 08/25/17</u>
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Test Sediment Preparation Notes

Study: 29519 & 29520

Client: AECOM

Project: New Haven Harbor

Field ID	Receipt Number	Notes
Composite 1	29517-001	Sieved 2mm, 1 gallon. \approx 200mL excluded. Few rocks and shells. "pudding" like. High moisture, fine. Dark gray
Composite 2	29517-002	Sieved 2mm, 1 gallon. Few small shells excluded. Very fine sediment. High moisture. Dark black / gray.
Composite 3	29517-003	Sieved 2mm, 1 gallon. \approx 50mL excluded. Few shells / rocks. Fine grain, high moisture. Gray.
Composite 4	29517-004	Sieved 2mm, 1 gallon. \approx 25mL excluded of shells. High moisture, sticky black sediment.
Composite 5	29517-005	Sieved 2mm, 1 gallon. Few shells excluded. High moisture. Black, Fine grain.
Composite 6	29517-006	Sieved 2mm, 1 gallon. Nothing excluded. Medium moisture. Black, granular sediment.
Composite 7	29517-007	Sieved 2mm, 1 gallon. Nothing excluded. Black, high moisture. Fine sediment
Composite 8	29517-008	Sieved 2mm, 1 gallon. Nothing excluded. Granular brown to black sediment. High moisture.
CLDS Ref Site	29517-009	Sieved 2mm, 1 gallon. Nothing excluded. Pudding-like, high moisture.
Date: 08/24/17 Initial: JTP/BG		

Pre-Assay Monitoring
Americamysis bahia
 ACUTE EXPOSURE SEDIMENT ASSAY

Study: 29520 Client: AECOM Project: New Haven Harbor

Day	Date	Renew	Pore Water Ammonia Measured	Initial
(sediment into beakers)	08/25/17			BG
1	08/25/17	✓		BG
2	08/26/17	✓		BG
3	08/27/17	✓		DD
4	08/28/17	✓		DD
5	08/29/17	✓		DD
6	08/30/17	✓		DD
7	08/31/17	✓		BG
8				
9				
10				
11				
12				
13				

Notes: ^{20°C @ JTP 08/25} • 30°C • Salinity: 30 ppt • Renew Daily-One Exchange



0346AR0083117

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species AMERICAMYSIS bahia

Source: Lab reared _____ Hatchery reared _____ Field collected _____

Hatch date 8-28-17 Receipt date _____Lot number 082817MS Strain _____

Brood origination _____

II. Water Quality

Temperature 25 °C Salinity ~28 ppt D.O. _____ ppmpH 7.8 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater ☒ Other _____Recirculating ☒ Flow through _____ Static renewal _____DIET: Flake food ☒ Phytoplankton _____ Trout chow _____Artemia ☒ Rotifers _____ YCT _____ Other Eucap. Shrimp Diet

Prophylactic treatments: _____

Comments: _____

IV. Shipping Information

Client: EST # of Organisms 2200+Carrier: _____ Date shipped 8-31-17Biologist: Mark J. ...PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

EnviroSystems Inc.

Organism Addition Record

Study Number: 29520	Species: A. bahia
Client: AECOM	Organism Lot ID: 03AbARO083117
Project: New Haven	Number of Organisms added to each chamber: 20
Date: 9/1/17	
Initials: AK	

Notes: Organisms were added to exposure @ 1600. AK 9/1/17

Americamysis bahia
ACUTE EXPOSURE SEDIMENT ASSAY

Study: 29520 Client: AECOM Project: New Haven Harbor

Day	Date	Renew / Feed	Initial
0 ^{E10} AK 9/1/17 (all beakers)	09/01/17	✓ / ✓	BG
1	09/02/17	✓ / ✓	BG
2	09/03/17	✓ / ✓	MS
3	09/04/17	✓ / ✓	MS
4	09/05/17	✓ / ✓	DD
5	09/06/17	✓ / ✓	BG
6	09/07/17	✓ / ✓	DD
7	09/08/17	✓ / ✓	BG
8	09/09/17	✓ / ✓	BG
9	09/10/17	✓ / ✓	DD
10 (all beakers)	09/11/17	✓ / —	DD

Overlying water collected for NH ₃	Day 0	Initial: BG
	Day 3	Initial: MS
	Day 10	Initial: AK 9/11/17

Notes: • 20°C • Salinity: 30 ppt • Feed Brine Shrimp x2 Daily • Renew Daily-One Exchange

E10 20 live *A. bahia* added to each beaker @ 1600. AK 9/1/17

E10 09/12 Temperature at 27°C, bath turned down to resolve issue.

DAY10 *Americamysis bahia* Sediment Assay Recovery

DATE: 9/11/2017

STUDY: 29520

CLIENT: AECOM

PROJECT: New Haven Harbor Navigation Improvement Project

SAMPLE ID	REP	#LIVE ADULTS	DATE & INITIAL		SAMPLE ID	REP	#LIVE ADULTS	DATE & INITIAL
Laboratory Control	A	17	9/11/17 KL		Composite #4	A	17	9/11/17 KL
	B	18				B	19	
	C	18				C	20	
	D	20				D	20	
	E	19	↓			E	18	↓
CLDS Reference Sediment	A	20	9/11/17 KL		Composite #5	A	17	9/11/17 KL
	B	20				B	19	
	C	20				C	18	
	D	18				D	20	
	E	20	↓			E	16	↓
Composite #1	A	14	9/11/17 KL		Composite #6	A	17	9/11/17 KL
	B	17				B	15	
	C	16				C	14	
	D	19				D	10	
	E	20	↓			E	18	↓
Composite #2	A	19	9/11/17 KL		Composite #7	A	18	9/11/17 KL
	B	20				B	14	
	C	18				C	18	
	D	19				D	20	
	E	18	↓			E	20	↓
Composite #3	A	18	9/11/17 KL		Composite #8	A	20	9/11/17 KL
	B	15				B	18	
	C	20				C	18	
	D	19				D	20	
	E	18	↓			E	20	↓

CETIS Test Data Worksheet

Report Date: 12 Sep-17 11:05 (p 1 of 2)
Test Code/ID: 04-6648-1218/29520Ab

Americamysis bahia 10-Day Survival Sediment Test					EnviroSystems, Inc.
Start Date:	01 Sep-17 12:00	Species:	Americamysis bahia	Sample Code:	29520-000
End Date:	11 Sep-17 12:00	Protocol:	EPA/600/R-94/025 (1994)	Sample Source:	New Haven Harbor FNP -2017
Sample Date:	01 Sep-17	Material:	Laboratory Control Sediment	Sample Station:	Laboratory Control - 29520
Sample	Rep	Pos	# Exposed	# Survived	Notes
29520-000	1	1	20	17	
29520-000	2	20	20	18	
29520-000	3	25	20	18	
29520-000	4	40	20	20	
29520-000	5	45	20	19	
29517-009	1	6	20	20	
29517-009	2	15	20	20	
29517-009	3	29	20	20	
29517-009	4	33	20	18	
29517-009	5	47	20	20	
29517-001	1	7	20	14	
29517-001	2	14	20	17	
29517-001	3	23	20	16	
29517-001	4	37	20	19	
29517-001	5	41	20	20	
29517-002	1	10	20	19	
29517-002	2	18	20	20	
29517-002	3	26	20	18	
29517-002	4	35	20	19	
29517-002	5	43	20	18	
29517-003	1	9	20	18	
29517-003	2	17	20	15	
29517-003	3	28	20	20	
29517-003	4	32	20	19	
29517-003	5	44	20	18	
29517-004	1	2	20	17	
29517-004	2	13	20	19	
29517-004	3	21	20	20	
29517-004	4	39	20	20	
29517-004	5	46	20	18	
29517-005	1	3	20	17	
29517-005	2	16	20	19	
29517-005	3	22	20	18	
29517-005	4	31	20	20	
29517-005	5	49	20	16	
29517-006	1	4	20	17	
29517-006	2	12	20	15	
29517-006	3	27	20	14	
29517-006	4	36	20	10	
29517-006	5	42	20	18	
59517-007	1	8	20	18	
59517-007	2	19	20	14	
59517-007	3	30	20	18	
59517-007	4	38	20	20	
59517-007	5	50	20	20	
29517-008	1	5	20	20	
29517-008	2	11	20	18	

CETIS Test Data Worksheet

Report Date: 12 Sep-17 11:05 (p 2 of 2)
Test Code/ID: 04-6648-1218/29520Ab

Sample	Rep	Pos	# Exposed	# Survived	Notes
29517-008	3	24	20	18	
29517-008	4	34	20	20	
29517-008	5	48	20	20	

CETIS Summary Report

Report Date: 12 Sep-17 13:29 (p 1 of 2)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test						EnviroSystems, Inc.					
Batch ID: 00-0170-8791		Test Type: Survival				Analyst: Nancy Roka					
Start Date: 01 Sep-17 12:00		Protocol: EPA/600/R-94/025 (1994)				Diluent: Not Applicable					
Ending Date: 11 Sep-17 12:00		Species: Americamysis bahia				Brine: Not Applicable					
Duration: 10d 0h		Source: ARO - Aquatic Research Organisms, NH				Age:					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29520-000	15-6829-9501	01 Sep-17	01 Sep-17	12h	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h							
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	11d 3h							
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	11d 2h							
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	10d 22h							
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	10d 21h							
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	10d 20h							
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	11d							
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	10d 20h							
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	11d 1h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29520-000	Laboratory Control Sediment	New Haven Harbor FNP -2017			Laboratory Control - 29520						
29517-009	Marine Sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Single Comparison Summary											
Analysis ID	Endpoint	Comparison Method				P-Value	Comparison Result				
02-0524-2246	Proportion Survived	Equal Variance t Two-Sample Test				0.9518	29517-009 passed proportion survived				
16-9465-5364	Proportion Survived	Equal Variance t Two-Sample Test				0.0316	29517-001 failed proportion survived				
14-7523-0566	Proportion Survived	Equal Variance t Two-Sample Test				0.0825	29517-002 passed proportion survived				
07-6055-1711	Proportion Survived	Equal Variance t Two-Sample Test				0.0512	29517-003 passed proportion survived				
04-8531-6311	Proportion Survived	Equal Variance t Two-Sample Test				0.1453	29517-004 passed proportion survived				
07-5694-8658	Proportion Survived	Equal Variance t Two-Sample Test				0.0403	29517-005 failed proportion survived				
10-7830-4760	Proportion Survived	Equal Variance t Two-Sample Test				0.0018	29517-006 failed proportion survived				
20-9616-2148	Proportion Survived	Equal Variance t Two-Sample Test				0.0980	59517-007 passed proportion survived				
21-3427-1691	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test				0.5000	29517-008 passed proportion survived				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29520-000	LC	5	0.920	0.849	0.991	0.850	1.000	0.026	0.057	6.20%	0.00%
29517-009	RS	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-6.52%
29517-001		5	0.860	0.712	1.000	0.700	1.000	0.053	0.119	13.88%	6.52%
29517-002		5	0.940	0.888	0.992	0.900	1.000	0.019	0.042	4.45%	-2.17%
29517-003		5	0.900	0.784	1.000	0.750	1.000	0.042	0.094	10.39%	2.17%
29517-004		5	0.940	0.859	1.000	0.850	1.000	0.029	0.065	6.94%	-2.17%
29517-005		5	0.900	0.802	0.998	0.800	1.000	0.035	0.079	8.78%	2.17%
29517-006		5	0.740	0.547	0.933	0.500	0.900	0.070	0.156	21.04%	19.57%
59517-007		5	0.900	0.748	1.000	0.700	1.000	0.055	0.122	13.61%	2.17%
29517-008		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	-4.35%

CETIS Summary Report

Report Date: 12 Sep-17 13:29 (p 2 of 2)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test						EnviroSystems, Inc.
Proportion Survived Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29520-000	LC	0.850	0.900	0.900	1.000	0.950
29517-009	RS	1.000	1.000	1.000	0.900	1.000
29517-001		0.700	0.850	0.800	0.950	1.000
29517-002		0.950	1.000	0.900	0.950	0.900
29517-003		0.900	0.750	1.000	0.950	0.900
29517-004		0.850	0.950	1.000	1.000	0.900
29517-005		0.850	0.950	0.900	1.000	0.800
29517-006		0.850	0.750	0.700	0.500	0.900
59517-007		0.900	0.700	0.900	1.000	1.000
29517-008		1.000	0.900	0.900	1.000	1.000

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 1 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 02-0524-2246		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29520-000	15-6829-9501	01 Sep-17	01 Sep-17	12h	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29520-000	Laboratory Control Sediment	New Haven Harbor FNP -2017			Laboratory Control - 29520						
29517-009	Marine Sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-009 passed proportion survived			7.48%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Reference Sed	-1.88	1.86	0.12	8	CDF	0.9518	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6026	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0370699		0.0370699		1	3.55	0.0964	Non-Significant Effect			
Error	0.0836128		0.0104516		8						
Total	0.120683				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.38	23.2	0.7644	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.914	0.741	0.3108	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29520-000	LC	5	0.920	0.849	0.991		0.850	1.000	0.026	6.20%	0.00%
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	-6.52%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29520-000	LC	5	1.3	1.16	1.43		1.17	1.46	0.0492	8.50%	0.00%
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	-9.40%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29520-000	LC	0.850	0.900	0.900	1.000	0.950					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29520-000	LC										
29517-009	RS										

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 2 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 16-9465-5364		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	11d 3h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-001 failed proportion survived			8.55%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001*	2.16	1.86	0.174	8	CDF	0.0316	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5904	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.101735		0.101735		1	4.65	0.0632	Non-Significant Effect			
Error	0.175069		0.0218836		8						
Total	0.276804				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.98	23.2	0.2099	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7186	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-001		5	0.860	0.712	1.000		0.700	1.000	0.053	13.88%	12.24%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-001		5	1.22	0.983	1.45		0.991	1.46	0.0836	15.39%	14.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-001		0.700	0.850	0.800	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-001											

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 3 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 14-7523-0566		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	11d 2h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29517-002 passed proportion survived				4.72%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.53	1.86	0.106	8	CDF	0.0825	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.97	2.29	0.2665	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0190676		0.0190676		1	2.33	0.1650	Non-Significant Effect			
Error	0.0653354		0.0081669		8						
Total	0.084403				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.17	23.2	0.8847	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.89	0.741	0.1705	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-002		5	0.940	0.888	0.992		0.900	1.000	0.019	4.45%	4.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-002		5	1.33	1.22	1.44		1.25	1.46	0.0388	6.53%	6.16%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-002		0.950	1.000	0.900	0.950	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-002											

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 4 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.		
Analysis ID: 07-6055-1711		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3					
Analyzed: 12 Sep-17 12:18		Analysis: Parametric-Two Sample					Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project						
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu						
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	10d 22h								
Sample Code	Material Type		Sample Source		Station Location		Lat/Long					
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)		C > T			29517-003 passed proportion survived					7.00%		
Equal Variance t Two-Sample Test												
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
Reference Sed		29517-003	1.84	1.86	0.148	8	CDF	0.0512	Non-Significant Effect			
Auxiliary Tests												
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test			1.87	2.29	0.3837	No Outliers Detected				
ANOVA Table												
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0539857		0.0539857		1	3.4	0.1024	Non-Significant Effect			
Error		0.127		0.015875		8						
Total		0.180986				9						
Distributional Tests												
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances		Variance Ratio F Test			2.61	23.2	0.3754	Equal Variances				
Distribution		Shapiro-Wilk W Normality Test			0.896	0.741	0.1965	Normal Distribution				
Proportion Survived Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%	
29517-003		5	0.900	0.784	1.000		0.750	1.000	0.042	10.39%	8.16%	
Angular (Corrected) Transformed Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%	
29517-003		5	1.27	1.08	1.46		1.05	1.46	0.0678	11.93%	10.37%	
Proportion Survived Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
29517-009	RS	1.000	1.000	1.000	0.900	1.000						
29517-003		0.900	0.750	1.000	0.950	0.900						
Angular (Corrected) Transformed Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
29517-009	RS											
29517-003												

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 5 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 04-8531-6311			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	10d 21h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site		Composite 4 (Sta J,K,L)				
29517-004	Marine Sediment		New Haven Harbor FNP -2017								
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29517-004 passed proportion survived				6.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.13	1.86	0.131	8	CDF	0.1453	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.6	2.29	0.9183	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0159311		0.0159311		1	1.28	0.2905	Non-Significant Effect			
Error	0.0995027		0.0124378		8						
Total	0.115434				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.83	23.2	0.5733	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.857	0.741	0.0708	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-004		5	0.940	0.859	1.000		0.850	1.000	0.029	6.94%	4.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-004		5	1.34	1.18	1.49		1.17	1.46	0.0567	9.48%	5.63%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-004		0.850	0.950	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-004											

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 6 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 07-5694-8658			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	10d 20h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site		Composite 5 (Sta M,N,O)				
29517-005	Marine Sediment		New Haven Harbor FNP -2017								
Data Transform		Alt Hyp			Comparison Result					PMSD	
Angular (Corrected)		C > T			29517-005 failed proportion survived					6.51%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	2	1.86	0.14	8	CDF	0.0403	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.72	2.29	0.6501	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0563622		0.0563622		1	4	0.0806	Non-Significant Effect			
Error	0.112775		0.0140969		8						
Total	0.169137				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.21	23.2	0.4625	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.741	0.3140	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-005		5	0.900	0.802	0.998		0.800	1.000	0.035	8.78%	8.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-005		5	1.27	1.09	1.44		1.11	1.46	0.0623	11.00%	10.60%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-005		0.850	0.950	0.900	1.000	0.800					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-005											

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 7 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 10-7830-4760		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:18		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	11d							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-006 failed proportion survived			8.18%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.07	1.86	0.168	8	CDF	0.0018	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2793	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.337893		0.337893		1	16.5	0.0036	Significant Effect			
Error	0.163437		0.0204296		8						
Total	0.501329				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.65	23.2	0.2382	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.925	0.741	0.3989	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-006		5	0.740	0.547	0.933		0.500	0.900	0.070	21.04%	24.49%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-006		5	1.05	0.827	1.27		0.785	1.25	0.0801	17.07%	25.95%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-006		0.850	0.750	0.700	0.500	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-006											

CETIS Analytical Report

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Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 20-9616-2148		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:19		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	10d 20h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			59517-007 passed proportion survived				8.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	1.41	1.86	0.179	8	CDF	0.0980	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.03	2.29	0.2082	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0458756		0.0458756		1	1.99	0.1960	Non-Significant Effect		
Error		0.184431		0.0230538		8					
Total		0.230306				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.24	23.2	0.1906	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.898	0.741	0.2058	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
59517-007		5	0.900	0.748	1.000		0.700	1.000	0.055	13.61%	8.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
59517-007		5	1.28	1.04	1.52		0.991	1.46	0.0864	15.07%	9.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
59517-007		0.900	0.700	0.900	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
59517-007											

CETIS Analytical Report

Report Date: 12 Sep-17 13:28 (p 9 of 9)
Test Code: 29520Ab | 04-6648-1218

Americamysis bahia 10-Day Survival Sediment Test										EnviroSystems, Inc.	
Analysis ID: 21-3427-1691		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:19		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	11d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C > T		29517-008 passed proportion survived				5.61%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.004398		0.004398		1	0.4	0.5447	Non-Significant Effect			
Error	0.087959		0.0109949		8						
Total	0.092357				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	23.2	0.7040	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.759	0.741	0.0045	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.980	0.924	1.000		0.900	1.000	0.020	4.56%	0.00%
29517-008		5	0.960	0.892	1.000		0.900	1.000	0.025	5.71%	2.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.42	1.3	1.53		1.25	1.46	0.0419	6.62%	0.00%
29517-008		5	1.37	1.23	1.52		1.25	1.46	0.0514	8.35%	2.96%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	1.000	1.000	0.900	1.000					
29517-008		1.000	0.900	0.900	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-008											

Sample Reading Order for Water Quality Measurements

Study: 29520 Client: AECOM Project: New Haven Harbor

Reading order for days 0 and 10

Reading Number	Field ID	Replicate	Lab Code
1	Laboratory Control Sediment	A	29520-000
2		B	
3		C	
4		D	
5		E	
6	CLDS Reference Sediment	A	29517-009
7		B	
8		C	
9		D	
10		E	
11	Composite 1	A	29517-001
12		B	
13		C	
14		D	
15		E	
16	Composite 2	A	29517-002
17		B	
18		C	
19		D	
20		E	
21	Composite 3	A	29517-003
22		B	
23		C	
24		D	
25		E	
26	Composite 4	A	29517-004
27		B	
28		C	
29		D	
30		E	
31	Composite 5	A	29517-005
32		B	
33		C	
34		D	
35		E	
36	Composite 6	A	29517-006
37		B	
38		C	
39		D	
40		E	

Sample Reading Order for Water Quality Measurements

Study: 29520 Client: AECOM Project: New Haven Harbor

41	Composite 7	A	29517-007
42		B	
43		C	
44		D	
45		E	
46	Composite 8	A	29517-008
47		B	
48		C	
49		D	
50		E	

Reading order for days 1 - 9

Reading Number	Field ID	Replicate	Lab Code
1	Laboratory Control Sediment	A	29520-000
2	CLDS Reference Sediment	A	29517-009
3	Composite 1	A	29517-001
4	Composite 2	A	29517-002
5	Composite 3	A	29517-003
6	Composite 4	A	29517-004
7	Composite 5	A	29517-005
8	Composite 6	A	29517-006
9	Composite 7	A	29517-007
10	Composite 8	A	29517-008

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.5	7.06	93.3	8.02	46313	30.11
Minimum:	19.5	3.11	40.2	7.79	44816	29.02
Maximum:	22.1	7.93	102.7	8.31	48623	31.80

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	00	9/1/2017 09:06:55	21.2	7.15	95.8	7.93	45859	29.77
Laboratory Control	B	00	9/1/2017 09:07:16	21.2	7.14	95.7	7.95	46040	29.91
Laboratory Control	C	00	9/1/2017 09:07:33	21.2	7.12	95.4	7.93	45956	29.84
Laboratory Control	D	00	9/1/2017 09:07:47	21.2	7.2	96.3	7.91	45701	29.66
Laboratory Control	E	00	9/1/2017 09:08:10	21.3	7.05	94.4	7.92	45659	29.63
CLDS Reference Site	A	00	9/1/2017 09:08:33	21.2	7.06	94.6	7.95	45846	29.77
CLDS Reference Site	B	00	9/1/2017 09:08:55	21.3	7.07	94.7	7.96	45713	29.67
CLDS Reference Site	C	00	9/1/2017 09:09:07	21.2	7.07	94.7	7.96	46180	30.01
CLDS Reference Site	D	00	9/1/2017 09:09:25	21.2	7.14	95.6	7.97	46027	29.9
CLDS Reference Site	E	00	9/1/2017 09:09:39	21.3	7.09	94.8	7.97	45604	29.59
Composite 1	A	00	9/1/2017 09:10:03	21.3	7.07	94.8	7.96	45965	29.85
Composite 1	B	00	9/1/2017 09:10:17	21.3	7.05	94.4	7.96	45760	29.7
Composite 1	C	00	9/1/2017 09:10:33	21.3	7.1	95.1	7.96	45792	29.73
Composite 1	D	00	9/1/2017 09:10:55	21.3	7.14	95.6	7.97	45620	29.6
Composite 1	E	00	9/1/2017 09:11:12	21.3	7.08	94.8	7.97	45576	29.57
Composite 2	A	00	9/1/2017 09:11:41	21.3	7.05	94.5	7.98	45862	29.78
Composite 2	B	00	9/1/2017 09:12:00	21.3	7.03	94.2	7.97	45686	29.65
Composite 2	C	00	9/1/2017 09:12:18	21.3	7.07	94.6	7.97	45609	29.59
Composite 2	D	00	9/1/2017 09:12:41	21.3	6.98	93.4	7.98	45636	29.61
Composite 2	E	00	9/1/2017 09:13:00	21.3	7.07	94.6	7.98	45533	29.54
Composite 3	A	00	9/1/2017 09:13:33	21.3	6.99	93.6	7.95	45568	29.56
Composite 3	B	00	9/1/2017 09:13:52	21.3	7.01	93.8	7.94	45537	29.54
Composite 3	C	00	9/1/2017 09:14:13	21.2	7.02	93.9	7.95	45538	29.54
Composite 3	D	00	9/1/2017 09:14:35	21.2	7.12	95.3	7.95	45527	29.53
Composite 3	E	00	9/1/2017 09:14:52	21.2	7.06	94.3	7.94	45340	29.4
Composite 4	A	00	9/1/2017 09:15:15	21.3	6.96	93.2	8	45838	29.76
Composite 4	B	00	9/1/2017 09:15:30	21.2	7.02	94	8.01	45832	29.76
Composite 4	C	00	9/1/2017 09:15:48	21.2	7.05	93.9	8.01	44816	29.02
Composite 4	D	00	9/1/2017 09:16:06	21.2	6.95	93	8.02	45794	29.73
Composite 4	E	00	9/1/2017 09:16:25	21.2	7.01	93.9	8.02	45864	29.78
Composite 5	A	00	9/1/2017 09:17:06	21.2	7.02	94	8.05	45887	29.79
Composite 5	B	00	9/1/2017 09:17:27	21.2	6.98	93.5	8.03	45884	29.79
Composite 5	C	00	9/1/2017 09:17:50	21.2	6.96	93.2	8.03	45856	29.77
Composite 5	D	00	9/1/2017 09:18:08	21.2	7.07	94.7	8.04	45893	29.8
Composite 5	E	00	9/1/2017 09:18:31	21.2	7.03	94.1	8.06	45985	29.87
Composite 6	A	00	9/1/2017 09:18:54	21.2	6.94	92.9	7.98	45934	29.83
Composite 6	B	00	9/1/2017 09:19:06	21.2	6.98	93.4	7.98	45918	29.82
Composite 6	C	00	9/1/2017 09:19:35	21.2	7.02	94	8.02	46044	29.91
Composite 6	D	00	9/1/2017 09:19:57	21.2	7.04	94.2	7.98	45876	29.79
Composite 6	E	00	9/1/2017 09:20:19	21.2	6.95	93	7.97	45936	29.83
Composite 7	A	00	9/1/2017 09:20:43	21.2	6.95	93.1	7.94	45949	29.84

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.5	7.06	93.3	8.02	46313	30.11
Minimum:	19.5	3.11	40.2	7.79	44816	29.02
Maximum:	22.1	7.93	102.7	8.31	48623	31.80

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 7	B	00	9/1/2017 09:21:06	21.2	7.05	94.3	7.95	45949	29.84
Composite 7	C	00	9/1/2017 09:21:24	21.2	7.08	94.8	7.96	45935	29.83
Composite 7	D	00	9/1/2017 09:21:42	21.2	6.94	92.9	7.93	45964	29.85
Composite 7	E	00	9/1/2017 09:22:00	21.2	7.05	94.4	7.93	45967	29.85
Composite 8	A	00	9/1/2017 09:22:21	21.2	7.02	94	8.05	46106	29.95
Composite 8	B	00	9/1/2017 09:22:32	21.2	6.98	93.5	8.06	46072	29.93
Composite 8	C	00	9/1/2017 09:22:48	21.1	7.1	95.1	8.05	46448	30.2
Composite 8	D	00	9/1/2017 09:23:13	21.2	6.65	89	8.02	45927	29.82
Composite 8	E	00	9/1/2017 09:23:31	21.2	7	93.7	8.06	45999	29.88
Laboratory Control	A	01	9/2/2017 12:31:46	22	6.79	92.4	7.83	48223	31.49
CLDS Reference Site	A	01	9/2/2017 12:32:05	21.9	6.47	87.9	7.87	48412	31.62
Composite 1	A	01	9/2/2017 12:32:21	22	6.44	87.7	7.86	48355	31.58
Composite 2	A	01	9/2/2017 12:32:36	22	6.76	92.2	7.91	48244	31.5
Composite 3	A	01	9/2/2017 12:32:49	22	6.79	92.5	7.9	48101	31.4
Composite 4	A	01	9/2/2017 12:33:05	22	6.54	89.2	7.88	48363	31.59
Composite 5	A	01	9/2/2017 12:33:27	22	6.44	87.9	7.88	48477	31.67
Composite 6	A	01	9/2/2017 12:33:42	22	6.48	88.3	7.87	48480	31.67
Composite 7	A	01	9/2/2017 12:34:02	22.1	6.7	91.4	7.88	48456	31.65
Composite 8	A	01	9/2/2017 12:34:16	22.1	6.57	89.6	8	48386	31.6
Laboratory Control	A	02	9/3/2017 13:06:25	20.5	7.47	98.6	8.02	45385	29.44
CLDS Reference Site	A	02	9/3/2017 13:06:34	20.5	7.41	97.7	8	45284	29.36
Composite 1	A	02	9/3/2017 13:06:59	20.5	4.06	53.6	7.79	45223	29.32
Composite 2	A	02	9/3/2017 13:08:01	20.5	7.22	95.2	7.99	45246	29.34
Composite 3	A	02	9/3/2017 13:08:18	20.5	7.28	96	7.99	45094	29.23
Composite 4	A	02	9/3/2017 13:08:32	20.5	7.18	94.9	8	45745	29.7
Composite 5	A	02	9/3/2017 13:08:47	20.5	7.11	93.8	8.01	45436	29.47
Composite 6	A	02	9/3/2017 13:09:00	20.5	7.03	93	7.98	45940	29.84
Composite 7	A	02	9/3/2017 13:09:16	20.5	7.16	94.8	7.96	45928	29.83
Composite 8	A	02	9/3/2017 13:09:29	20.5	5.63	74.5	7.97	45885	29.8
Laboratory Control	A	03	9/4/2017 10:07:50	20.4	7.28	96.7	7.95	46281	30.09
CLDS Reference Site	A	03	9/4/2017 10:08:14	20.4	7.2	95.5	7.98	46159	30
Composite 1	A	03	9/4/2017 10:08:36	20.4	7.14	94.7	7.98	46118	29.97
Composite 2	A	03	9/4/2017 10:09:04	20.4	7.11	94.2	8.03	46089	29.95
Composite 3	A	03	9/4/2017 10:09:28	20.4	7.17	95	7.99	45996	29.88
Composite 4	A	03	9/4/2017 10:09:52	20.4	6.92	91.9	8.02	46419	30.19
Composite 5	A	03	9/4/2017 10:10:07	20.4	6.84	90.8	8.04	46542	30.28
Composite 6	A	03	9/4/2017 10:10:31	20.4	6.83	90.8	8	46640	30.35
Composite 7	A	03	9/4/2017 10:10:53	20.4	7.09	94.1	7.95	46601	30.32

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.5	7.06	93.3	8.02	46313	30.11
Minimum:	19.5	3.11	40.2	7.79	44816	29.02
Maximum:	22.1	7.93	102.7	8.31	48623	31.80

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 8	A	03	9/4/2017 10:11:13	20.4	6.92	91.9	8.1	46571	30.3
Laboratory Control	A	04	9/5/2017 10:26:18	20.7	7.39	99.2	7.99	46854	30.5
CLDS Reference Site	A	04	9/5/2017 10:26:32	20.7	7.35	98.6	8.01	46785	30.45
Composite 1	A	04	9/5/2017 10:26:53	20.7	7.08	95	7.99	46800	30.46
Composite 2	A	04	9/5/2017 10:27:15	20.7	7.12	95.4	8.05	46775	30.44
Composite 3	A	04	9/5/2017 10:27:27	20.6	7.25	97.2	8.03	46750	30.43
Composite 4	A	04	9/5/2017 10:27:44	20.6	7.01	93.9	8.07	46960	30.58
Composite 5	A	04	9/5/2017 10:27:56	20.6	7.02	94.1	8.09	47023	30.62
Composite 6	A	04	9/5/2017 10:28:10	20.6	6.85	91.8	8.02	47075	30.66
Composite 7	A	04	9/5/2017 10:28:28	20.6	7.1	95.3	7.96	47077	30.66
Composite 8	A	04	9/5/2017 10:28:42	20.6	7.03	94.3	8.14	47069	30.66
Laboratory Control	A	05	9/6/2017 10:11:35	20.9	7.21	96.6	7.96	46416	30.18
CLDS Reference Site	A	05	9/6/2017 10:11:55	20.9	7.12	95.4	8	46494	30.24
Composite 1	A	05	9/6/2017 10:12:20	20.9	6.79	91	8	46479	30.23
Composite 2	A	05	9/6/2017 10:12:43	20.9	6.97	93.4	8.06	46504	30.25
Composite 3	A	05	9/6/2017 10:13:07	21	7.01	94	8.02	46431	30.19
Composite 4	A	05	9/6/2017 10:13:22	21	6.87	92.2	8.1	46637	30.34
Composite 5	A	05	9/6/2017 10:13:41	21	6.7	89.8	8.13	46654	30.35
Composite 6	A	05	9/6/2017 10:14:02	21	6.65	89.3	8.04	46714	30.4
Composite 7	A	05	9/6/2017 10:14:18	21	6.88	92	7.97	45958	29.85
Composite 8	A	05	9/6/2017 10:14:33	21	6.81	91.4	8.13	46641	30.34
Laboratory Control	A	06	9/7/2017 09:54:04	20.6	7.29	97.5	7.93	46617	30.33
CLDS Reference Site	A	06	9/7/2017 09:54:17	20.6	7.45	99.7	7.98	46634	30.34
Composite 1	A	06	9/7/2017 09:54:34	20.6	7.23	96.7	7.99	46675	30.37
Composite 2	A	06	9/7/2017 09:54:44	20.6	7.15	95.6	8.05	46734	30.41
Composite 3	A	06	9/7/2017 09:54:52	20.6	7.19	96.2	8.03	46707	30.39
Composite 4	A	06	9/7/2017 09:56:34	20.6	7.03	94.2	8.18	46986	30.6
Composite 5	A	06	9/7/2017 09:56:52	20.6	6.9	92.4	8.16	46944	30.57
Composite 6	A	06	9/7/2017 09:57:06	20.6	6.78	90.9	8.05	47025	30.63
Composite 7	A	06	9/7/2017 09:57:29	20.6	7.11	95.1	7.94	46716	30.4
Composite 8	A	06	9/7/2017 09:57:53	20.6	6.99	93.6	8.15	46949	30.57
Laboratory Control	A	07	9/8/2017 09:07:53	20	7.48	97.6	7.96	45369	29.43
CLDS Reference Site	A	07	9/8/2017 09:08:11	20	7.64	99.7	8.01	45492	29.52
Composite 1	A	07	9/8/2017 09:08:26	20	7.42	96.9	8.03	45515	29.54
Composite 2	A	07	9/8/2017 09:08:47	20	7.26	94.8	8.09	45546	29.56
Composite 3	A	07	9/8/2017 09:09:07	20	7.29	95.2	8.05	45585	29.59
Composite 4	A	07	9/8/2017 09:09:29	20	7.21	94.2	8.17	45782	29.73

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.5	7.06	93.3	8.02	46313	30.11
Minimum:	19.5	3.11	40.2	7.79	44816	29.02
Maximum:	22.1	7.93	102.7	8.31	48623	31.80

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 5	A	07	9/8/2017 09:09:46	20	7.07	92.4	8.19	45767	29.72
Composite 6	A	07	9/8/2017 09:10:08	20	6.87	89.8	8.04	45846	29.77
Composite 7	A	07	9/8/2017 09:10:31	19.9	7.3	95.4	7.95	45697	29.67
Composite 8	A	07	9/8/2017 09:10:49	20	7.16	93.5	8.1	45837	29.77
Laboratory Control	A	08	9/9/2017 09:59:49	19.7	7.44	96.1	7.93	45669	29.65
CLDS Reference Site	A	08	9/9/2017 10:00:11	19.7	7.63	98.7	7.98	45955	29.86
Composite 1	A	08	9/9/2017 10:00:35	19.7	7.33	94.8	8.01	45984	29.88
Composite 2	A	08	9/9/2017 10:00:55	19.7	7.22	93.4	8.07	45952	29.85
Composite 3	A	08	9/9/2017 10:01:09	19.7	7.28	94.1	8.03	45975	29.87
Composite 4	A	08	9/9/2017 10:01:26	19.7	7.03	91	8.13	46201	30.03
Composite 5	A	08	9/9/2017 10:01:48	19.7	6.96	90.1	8.18	46275	30.09
Composite 6	A	08	9/9/2017 10:02:08	19.7	6.86	88.9	8.02	46302	30.11
Composite 7	A	08	9/9/2017 10:02:26	19.7	7.24	93.7	7.92	46218	30.05
Composite 8	A	08	9/9/2017 10:02:41	19.7	7.16	92.8	8.02	46312	30.11
Laboratory Control	A	09	9/10/2017 10:16:16	20	7.63	99	7.97	46361	30.15
CLDS Reference Site	A	09	9/10/2017 10:16:34	19.9	7.93	102.7	8	46428	30.2
Composite 1	A	09	9/10/2017 10:16:56	19.9	7.54	97.7	8.02	46526	30.27
Composite 2	A	09	9/10/2017 10:17:10	19.9	7.29	94.5	8.07	46571	30.3
Composite 3	A	09	9/10/2017 10:17:18	19.9	7.37	95.6	8.03	46573	30.3
Composite 4	A	09	9/10/2017 10:17:31	19.9	7.2	93.4	8.14	46844	30.5
Composite 5	A	09	9/10/2017 10:17:39	19.9	7.17	93	8.17	46817	30.48
Composite 6	A	09	9/10/2017 10:17:51	19.9	7.1	92.2	8.05	46925	30.56
Composite 7	A	09	9/10/2017 10:18:06	19.9	7.48	97.1	7.94	46811	30.47
Composite 8	A	09	9/10/2017 10:18:21	19.9	7.27	94.4	8.02	46880	30.52
Laboratory Control	A	10	9/11/2017 09:09:54	19.8	7.54	97.7	8	46287	30.1
Laboratory Control	B	10	9/11/2017 09:10:13	19.8	7.46	96.8	7.97	46619	30.34
Laboratory Control	C	10	9/11/2017 09:10:36	19.7	7.45	96.5	7.93	46577	30.31
Laboratory Control	D	10	9/11/2017 09:11:01	19.8	7.39	95.7	7.92	46158	30
Laboratory Control	E	10	9/11/2017 09:11:21	19.8	7.43	96.1	7.94	46213	30.04
CLDS Reference Site	A	10	9/11/2017 09:11:41	19.8	7.75	100.4	8.06	46423	30.19
CLDS Reference Site	B	10	9/11/2017 09:11:57	19.8	7.52	97.5	8.02	46377	30.16
CLDS Reference Site	C	10	9/11/2017 09:12:14	19.5	7.29	94.9	7.95	48623	31.8
CLDS Reference Site	D	10	9/11/2017 09:12:27	19.8	7.27	94.2	7.97	46336	30.13
CLDS Reference Site	E	10	9/11/2017 09:12:40	19.8	7.45	96.4	7.99	46163	30.01
Composite 1	A	10	9/11/2017 09:13:01	19.8	7.45	96.6	8.07	46417	30.19
Composite 1	B	10	9/11/2017 09:13:15	19.8	7.34	95.1	8.09	46258	30.07
Composite 1	C	10	9/11/2017 09:13:27	19.7	7.26	93.9	8.05	46286	30.09
Composite 1	D	10	9/11/2017 09:13:47	19.8	4.3	55.6	7.93	46116	29.97

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.5	7.06	93.3	8.02	46313	30.11
Minimum:	19.5	3.11	40.2	7.79	44816	29.02
Maximum:	22.1	7.93	102.7	8.31	48623	31.80

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 1	E	10	9/11/2017 09:14:10	19.7	7.22	93.4	8	46196	30.03
Composite 2	A	10	9/11/2017 09:16:23	19.8	7.25	94.1	8.14	46510	30.26
Composite 2	B	10	9/11/2017 09:21:17	19.8	7.1	92.1	8.08	46327	30.12
Composite 2	C	10	9/11/2017 09:21:30	19.7	7.2	93.2	8.12	46290	30.1
Composite 2	D	10	9/11/2017 09:21:42	19.7	7.22	93.4	8.1	46188	30.02
Composite 2	E	10	9/11/2017 09:22:03	19.7	7.24	93.6	8.12	46122	29.98
Composite 3	A	10	9/11/2017 09:22:20	19.7	7.46	96.6	8.06	46505	30.25
Composite 3	B	10	9/11/2017 09:22:37	19.7	7.48	96.7	8.06	46304	30.11
Composite 3	C	10	9/11/2017 09:22:53	19.7	7.32	94.7	8.03	46370	30.16
Composite 3	D	10	9/11/2017 09:23:03	19.7	7.3	94.4	8.02	46244	30.06
Composite 3	E	10	9/11/2017 09:23:23	19.7	7.57	97.9	8.06	46172	30.01
Composite 4	A	10	9/11/2017 09:23:43	19.7	7.25	93.8	8.23	46565	30.3
Composite 4	B	10	9/11/2017 09:24:03	19.7	7.11	92.1	8.16	46489	30.24
Composite 4	C	10	9/11/2017 09:24:25	19.7	7.2	93.3	8.16	46540	30.28
Composite 4	D	10	9/11/2017 09:24:46	19.7	3.11	40.2	8.18	46297	30.1
Composite 4	E	10	9/11/2017 09:25:09	19.7	7.12	92.1	8.2	46331	30.13
Composite 5	A	10	9/11/2017 09:25:45	19.7	7.13	92.4	8.28	46565	30.3
Composite 5	B	10	9/11/2017 09:26:05	19.7	7.07	91.4	8.31	46403	30.18
Composite 5	C	10	9/11/2017 09:27:48	19.7	7.06	91.4	8.18	46335	30.13
Composite 5	D	10	9/11/2017 09:28:17	19.7	7.03	91	8.24	46342	30.14
Composite 5	E	10	9/11/2017 09:28:32	19.7	7.22	93.5	8.19	46350	30.14
Composite 6	A	10	9/11/2017 09:28:54	19.7	7.1	91.9	8.08	46623	30.34
Composite 6	B	10	9/11/2017 09:29:03	19.7	7.18	92.9	8.07	46407	30.18
Composite 6	C	10	9/11/2017 09:29:30	19.7	7.17	92.8	8.04	46371	30.16
Composite 6	D	10	9/11/2017 09:29:42	19.7	7.1	91.9	8.02	46287	30.1
Composite 6	E	10	9/11/2017 09:30:03	19.7	7.19	93.1	8.01	46373	30.16
Composite 7	A	10	9/11/2017 09:30:25	19.7	7.5	97.1	7.98	46524	30.27
Composite 7	B	10	9/11/2017 09:30:40	19.7	7.27	94	7.93	46388	30.17
Composite 7	C	10	9/11/2017 09:30:55	19.7	7.28	94.2	7.92	46306	30.11
Composite 7	D	10	9/11/2017 09:31:12	19.7	7.12	92.1	7.86	46307	30.11
Composite 7	E	10	9/11/2017 09:31:21	19.7	7.19	93	7.86	46333	30.13
Composite 8	A	10	9/11/2017 09:31:44	19.7	7.22	93.5	8.06	46549	30.29
Composite 8	B	10	9/11/2017 09:32:17	19.7	7.22	93.5	8.11	46676	30.38
Composite 8	C	10	9/11/2017 09:32:28	19.7	7.14	92.4	8.08	46462	30.22
Composite 8	D	10	9/11/2017 09:32:43	19.7	6.61	85.6	8.06	46302	30.11
Composite 8	E	10	9/11/2017 09:33:00	19.7	7.23	93.6	8.11	46338	30.13

STUDY: 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Americamysis bahia* 10 Day Solid Phase Sediment Assay

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia		QLimit	Units	Sampled	Analyzed
			Total	Unionized				
Laboratory Control	00	29520-100	0.15	0.0053	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
CLDS Reference Site	00	29520-101	ND	0.0019	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 1	00	29520-102	0.12	0.0046	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 2	00	29520-103	1.9	0.0758	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 3	00	29520-104	0.31	0.0116	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 4	00	29520-105	2	0.0834	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 5	00	29520-106	4.1	0.1895	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 6	00	29520-107	7.4	0.2932	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 7	00	29520-108	8.6	0.3118	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 8	00	29520-109	4.3	0.1988	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Laboratory Control	03	29520-200	0.42	0.0147	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
CLDS Reference Site	03	29520-201	0.18	0.0067	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 1	03	29520-202	0.29	0.0109	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 2	03	29520-203	1.2	0.0502	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 3	03	29520-204	0.11	0.0042	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 4	03	29520-205	0.58	0.0237	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 5	03	29520-206	2.3	0.0984	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 6	03	29520-207	5.1	0.1997	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 7	03	29520-208	5.8	0.2033	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 8	03	29520-209	3.1	0.1513	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Laboratory Control	10	29520-300	ND	0.0019	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
CLDS Reference Site	10	29520-301	ND	0.0021	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 1	10	29520-302	ND	0.0022	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 2	10	29520-303	0.17	0.0087	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 3	10	29520-304	ND	0.0021	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 4	10	29520-305	ND	0.0031	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 5	10	29520-306	0.11	0.0076	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 6	10	29520-307	0.11	0.0049	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 7	10	29520-308	ND	0.0018	0.1	mg/L as N	09/11/17 0930	09/19/17 1239
Composite 8	10	29520-309	0.15	0.0064	0.1	mg/L as N	09/11/17 0930	09/19/17 1239

Pre-Assay Monitoring
Leptocheirus plumulosus
 ACUTE EXPOSURE SEDIMENT ASSAY

Study: 29519 Client: AECOM Project: New Haven Harbor

Day	Date	Renew	Pore Water Ammonia Measured	Initial
(sediment into beakers)	08/24/17			DG
1	08/25/17	✓		DG
2	08/26/17	✓		DG
3	08/27/17	✓		DD
4	08/28/17	✓		DD
5	08/29/17	✓		DD
6	08/30/17	✓		DD
7	08/31/17	✓		DG
8				
9				
10				
11				
12				
13				

Notes: • 20°C • Salinity: 20 ppt • Renew Daily-One Exchange



Aquatic Research Organisms

99
NLPAR008317
09/13

DATA SHEET

I. Organism History

Species Leptocleirus plumosus
Source: Lab reared X Hatchery reared _____ Field collected _____
Hatch date 8/20/17 Receipt date _____
Lot number 080017LP Strain ARO
Brood origination Chesapeake Bay, MD

II. Water Quality

Temperature 24 °C Salinity ~20 ppt D.O. 5.5 ppm
pH ~8.0 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater X Other _____

Recirculating _____ Flow through _____ Static renewal X

DIET: Flake food X Phytoplankton _____ Trout chow X

Artemia _____ Rotifers _____ YCT _____ Other "GORG"

Prophylactic treatments: _____

Comments: 2-4mm long

IV. Shipping Information

Client: ESI # of Organisms 2500+

Carrier: FedEx Date shipped 8/31/17

Biologist: _____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

EnviroSystems Inc.

Organism Addition Record

Study Number: 29519	Species: <i>L. planulosus</i>
Client: AECOM	Organism Lot ID: 11LpAR0083117
Project: New Haven Harbor	Number of Organisms added to each chamber: 20
Date: 09/01/17	
Initials: BG/ JTP	

Notes: Pill caps counted by BG and JTP

Leptocheirus plumulosus
ACUTE EXPOSURE SEDIMENT ASSAY

Study: 29519 Client: AECOM Project: New Haven Harbor

Day	Date	Renew	Initial
0 (all beakers)	09/01/17	✓	TSC
1	09/02/17	✓	BG
2	09/03/17	✓	MS
3	09/04/17	✓	MS
4 <small>GRS 09/04</small>	09/05/17	✓	DD
5	09/06/17	✓	BG
6	09/07/17	✓	DD
7	09/08/17	✓	BG
8	09/09/17	✓	BG
9	09/10/17	✓	DD
10 (all beakers)	09/11/17	—	DD

Pore water collected for pH and NH ₃ Overlying water collected for NH ₃	Day 0	Initial: BG
	Day 3	Initial: MS
	Day 10	Initial: AK 9/11/17

Notes: • 20°C • Salinity: 20 ppt • Do Not Feed • Renew Daily-One Exchange

EW DO note Temperature noted as 27°C, back turned down.

GRS 09/04 Fed with brine Shrimp accidentally

DAY10 Leptocheirus plumulosus Sediment Assay Recovery

DATE: 9/11/2017

STUDY: 29519

CLIENT: AECOM

PROJECT: New Haven Harbor Navigation Improvement Project

SAMPLE ID	REP	#LIVE ADULTS	DATE & INITIAL		SAMPLE ID	REP	#LIVE ADULTS	DATE & INITIAL
Laboratory Control	A	18	9/11/17 KAS		Composite #4	A	20	09/11/17 GRS
	B	19	9/11/17 KAS			B	20	
	C	19	9/11/17 KAS			C	19	
	D	19	9/11/17 KAS			D	19	↓
	E	19	9/11/17 KAS			E	18	9/11/17 KAS
CLDS Reference Sediment	A	19	9/11/17 KAS		Composite #5	A	19	9/11/17 KAS
	B	20	9/11/17 KAS			B	18	9/11/17 KAS
	C	18	9/11/17 KAS			C	18	9/11/17 KAS
	D	18	9/11/17 KAS			D	20	9/11/17 KAS
	E	20	9/11/17 KAS			E	17	9/11/17 KAS
Composite #1	A	19	9/11/17 KAS		Composite #6	A	19	9/11/17 KAS
	B	20	9/11/17 KAS			B	16	9/11/17 KAS
	C	17	9/11/17 KAS			C	17	9/11/17 KAS
	D	20	9/11/17 KAS			D	18	9/11/17 KAS
	E	19	9/11/17 KAS			E	19	9/11/17 KAS
Composite #2	A	17	9/11/17 KAS		Composite #7 18	A	18	9/11/17 KAS
	B	20	9/11/17 KAS			B	20	9/11/17 KAS
	C	17	9/11/17 KAS			C	20	9/11/17 KAS
	D	18	9/11/17 KAS			D	18	9/11/17 KAS
	E	19	9/11/17 KAS			E	20	9/11/17 KAS
Composite #3	A	18	9/11/17 KAS		Composite #8	A	18	9/11/17 KAS
	B	17	9/11/17 KAS			B	15	9/11/17 KAS
	C	19	9/11/17 KAS			C	18	9/11/17 KAS
	D	19	9/11/17 KAS			D	18	9/11/17 KAS
	E	20	9/11/17 KAS			E	18	9/11/17 KAS

CETIS Test Data Worksheet

Report Date: 12 Sep-17 11:47 (p 1 of 2)
Test Code/ID: 11-3091-7112/29519Lp

Leptocheirus 10-d Survival and Reburial Sediment Test						EnviroSystems, Inc.
Start Date: 01 Sep-17 12:00		Species: Leptocheirus plumulosus		Sample Code: 29519-000		
End Date: 11 Sep-17 12:00		Protocol: EPA/600/R-94/025 (1994)		Sample Source: New Haven Harbor FNP -2017		
Sample Date: 01 Sep-17		Material: Laboratory Control Sediment		Sample Station: Laboratory Control - 29519		
Sample	Rep	Pos	# Exposed	# Survived	# Reburied	Notes
29519-000	1	6	20	18		
29519-000	2	12	20	19		
29519-000	3	30	20	19		
29519-000	4	31	20	19		
29519-000	5	50	20	19		
29517-009	1	4	20	19		
29517-009	2	11	20	20		
29517-009	3	24	20	18		
29517-009	4	39	20	18		
29517-009	5	47	20	20		
29517-001	1	9	20	19		
29517-001	2	16	20	20		
29517-001	3	26	20	17		
29517-001	4	37	20	20		
29517-001	5	44	20	19		
29517-002	1	2	20	17		
29517-002	2	19	20	20		
29517-002	3	22	20	17		
29517-002	4	38	20	18		
29517-002	5	42	20	19		
29517-003	1	10	20	18		
29517-003	2	17	20	17		
29517-003	3	27	20	19		
29517-003	4	36	20	19		
29517-003	5	45	20	20		
29517-004	1	1	20	20		
29517-004	2	14	20	20		
29517-004	3	28	20	19		
29517-004	4	35	20	19		
29517-004	5	43	20	18		
29517-005	1	5	20	19		
29517-005	2	20	20	18		
29517-005	3	21	20	18		
29517-005	4	34	20	20		
29517-005	5	46	20	17		
29517-006	1	8	20	19		
29517-006	2	18	20	16		
29517-006	3	29	20	17		
29517-006	4	33	20	18		
29517-006	5	49	20	19		
59517-007	1	7	20	18		
59517-007	2	13	20	20		
59517-007	3	25	20	20		
59517-007	4	32	20	18		
59517-007	5	41	20	20		
29517-008	1	3	20	18		
29517-008	2	15	20	15		

CETIS Test Data Worksheet

Report Date: 12 Sep-17 11:47 (p 2 of 2)
Test Code/ID: 11-3091-7112/29519Lp

Sample	Rep	Pos	# Exposed	# Survived	# Reburied	Notes
29517-008	3	23	20	18		
29517-008	4	40	20	18		
29517-008	5	48	20	18		

CETIS Summary Report

Report Date: 12 Sep-17 13:28 (p 1 of 2)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test						EnviroSystems, Inc.					
Batch ID:	14-6581-1248		Test Type: Survival-Reburial			Analyst:		Nancy Roka			
Start Date:	01 Sep-17 12:00		Protocol: EPA/600/R-94/025 (1994)			Diluent:		Not Applicable			
Ending Date:	11 Sep-17 12:00		Species: Leptocheirus plumulosus			Brine:		Not Applicable			
Duration:	10d 0h		Source: ARO - Aquatic Research Organisms, NH			Age:					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29519-000	13-7877-0805	01 Sep-17	01 Sep-17	12h	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h							
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	11d 3h							
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	11d 2h							
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	10d 22h							
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	10d 21h							
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	10d 20h							
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	11d							
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	10d 20h							
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	11d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29519-000	Laboratory Control Sediment	New Haven Harbor FNP -2017		Laboratory Control - 29519							
29517-009	Marine Sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Single Comparison Summary											
Analysis ID	Endpoint	Comparison Method			P-Value	Comparison Result					
05-0735-7775	Proportion Survived	Equal Variance t Two-Sample Test			0.6899	29517-009 passed proportion survived					
05-9198-0601	Proportion Survived	Equal Variance t Two-Sample Test			0.5223	29517-001 passed proportion survived					
12-1328-9380	Proportion Survived	Equal Variance t Two-Sample Test			0.1727	29517-002 passed proportion survived					
13-5565-1158	Proportion Survived	Equal Variance t Two-Sample Test			0.2949	29517-003 passed proportion survived					
19-6359-8052	Proportion Survived	Equal Variance t Two-Sample Test			0.6189	29517-004 passed proportion survived					
06-6072-2673	Proportion Survived	Equal Variance t Two-Sample Test			0.2126	29517-005 passed proportion survived					
13-3196-7384	Proportion Survived	Equal Variance t Two-Sample Test			0.0711	29517-006 passed proportion survived					
19-2658-9148	Proportion Survived	Equal Variance t Two-Sample Test			0.6237	59517-007 passed proportion survived					
05-8914-5430	Proportion Survived	Equal Variance t Two-Sample Test			0.0245	29517-008 failed proportion survived					
Test Acceptability											
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision				
05-0735-7775	Proportion Survived	Control Resp	0.94	0.9	>>	Yes	Passes Criteria				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29519-000	LC	5	0.940	0.912	0.968	0.900	0.950	0.010	0.022	2.38%	0.00%
29517-009	RS	5	0.950	0.888	1.000	0.900	1.000	0.022	0.050	5.26%	-1.06%
29517-001		5	0.950	0.874	1.000	0.850	1.000	0.027	0.061	6.45%	-1.06%
29517-002		5	0.910	0.829	0.991	0.850	1.000	0.029	0.065	7.16%	3.19%
29517-003		5	0.930	0.859	1.000	0.850	1.000	0.026	0.057	6.13%	1.06%
29517-004		5	0.960	0.908	1.000	0.900	1.000	0.019	0.042	4.36%	-2.13%
29517-005		5	0.920	0.849	0.991	0.850	1.000	0.026	0.057	6.20%	2.13%
29517-006		5	0.890	0.809	0.971	0.800	0.950	0.029	0.065	7.32%	5.32%
59517-007		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	-2.13%
29517-008		5	0.870	0.787	0.953	0.750	0.900	0.030	0.067	7.71%	7.45%

CETIS Summary Report

Report Date: 12 Sep-17 13:28 (p 2 of 2)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test						EnviroSystems, Inc.
Proportion Survived Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29519-000	LC	0.900	0.950	0.950	0.950	0.950
29517-009	RS	0.950	1.000	0.900	0.900	1.000
29517-001		0.950	1.000	0.850	1.000	0.950
29517-002		0.850	1.000	0.850	0.900	0.950
29517-003		0.900	0.850	0.950	0.950	1.000
29517-004		1.000	1.000	0.950	0.950	0.900
29517-005		0.950	0.900	0.900	1.000	0.850
29517-006		0.950	0.800	0.850	0.900	0.950
59517-007		0.900	1.000	1.000	0.900	1.000
29517-008		0.900	0.750	0.900	0.900	0.900

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 1 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 05-0735-7775			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29519-000	13-7877-0805	01 Sep-17	01 Sep-17	12h	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29519-000	Laboratory Control Sediment	New Haven Harbor FNP -2017	Laboratory Control - 29519								
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
Data Transform		Alt Hyp	Comparison Result			PMSD					
Angular (Corrected)		C > T	29517-009 passed proportion survived			5.39%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Reference Sed	-0.515	1.86	0.094	8	CDF	0.6899	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.41	2.29	1.0000	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0017086		0.0017086	1	0.266	0.6202	Non-Significant Effect				
Error	0.0514482		0.0064310	8							
Total	0.0531568			9							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		5.94	23.2	0.1125	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.883	0.741	0.1413	Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29519-000	LC	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	-1.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29519-000	LC	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	-1.97%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29519-000	LC	0.900	0.950	0.950	0.950	0.950					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29519-000	LC	1.25	1.35	1.35	1.35	1.35					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 2 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 05-9198-0601		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	11d 3h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-001 passed proportion survived			7.07%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.0577	1.86	0.131	8	CDF	0.5223	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5896	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4.116E-05		4.116E-05		1	0.00333	0.9554	Non-Significant Effect			
Error	0.0988406		0.0123551		8						
Total	0.0988818				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.24	23.2	0.8373	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.871	0.741	0.1022	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-001		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-001		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0523	8.63%	-0.30%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-001		0.950	1.000	0.850	1.000	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-001		1.35	1.46	1.17	1.46	1.35					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 3 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.		
Analysis ID: 12-1328-9380		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3					
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project						
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu						
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	11d 2h								
Sample Code	Material Type		Sample Source		Station Location		Lat/Long					
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD			
Angular (Corrected)		C > T			29517-002 passed proportion survived				7.30%			
Equal Variance t Two-Sample Test												
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
Reference Sed		29517-002	1	1.86	0.134	8	CDF	0.1727	Non-Significant Effect			
Auxiliary Tests												
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value		Grubbs Extreme Value Test			1.66	2.29	0.7593	No Outliers Detected				
ANOVA Table												
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0130762		0.0130762		1	1.01	0.3454	Non-Significant Effect			
Error		0.10407		0.0130088		8						
Total		0.117146				9						
Distributional Tests												
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances		Variance Ratio F Test			1.36	23.2	0.7713	Equal Variances				
Distribution		Shapiro-Wilk W Normality Test			0.869	0.741	0.0966	Normal Distribution				
Proportion Survived Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%	
29517-002		5	0.910	0.829	0.991	0.900	0.850	1.000	0.029	7.16%	4.21%	
Angular (Corrected) Transformed Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%	
29517-002		5	1.28	1.13	1.43	1.25	1.17	1.46	0.0548	9.57%	5.35%	
Proportion Survived Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
29517-009	RS	0.950	1.000	0.900	0.900	1.000						
29517-002		0.850	1.000	0.850	0.900	0.950						
Angular (Corrected) Transformed Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
29517-009	RS	1.35	1.46	1.25	1.25	1.46						
29517-002		1.17	1.46	1.17	1.25	1.35						

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 4 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 13-5565-1158		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	10d 22h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-003 passed proportion survived			6.71%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.562	1.86	0.125	8	CDF	0.2949	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.44	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0035882		0.0035882		1	0.315	0.5898	Non-Significant Effect		
Error		0.0910236		0.0113779		8					
Total		0.0946117				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.07	23.2	0.9515	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.931	0.741	0.4616	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-003		5	0.930	0.859	1.000	0.950	0.850	1.000	0.026	6.13%	2.11%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-003		5	1.31	1.18	1.45	1.35	1.17	1.46	0.0485	8.25%	2.80%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-003		0.900	0.850	0.950	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-003		1.25	1.17	1.35	1.35	1.46					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 5 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 19-6359-8052		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	10d 21h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-004 passed proportion survived			5.98%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.313	1.86	0.114	8	CDF	0.6189	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.33	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0009262		0.0009262		1	0.098	0.7623	Non-Significant Effect		
Error		0.0756368		0.0094546		8					
Total		0.0765629				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.39	23.2	0.7555	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.866	0.741	0.0889	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-004		5	0.960	0.908	1.000	0.950	0.900	1.000	0.019	4.36%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-004		5	1.37	1.26	1.48	1.35	1.25	1.46	0.0397	6.48%	-1.42%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-004		1.000	1.000	0.950	0.950	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-004		1.46	1.46	1.35	1.35	1.25					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 6 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 06-6072-2673			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	10d 20h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)								
Data Transform		Alt Hyp	Comparison Result				PMSD				
Angular (Corrected)		C > T	29517-005 passed proportion survived				6.78%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.84	1.86	0.126	8	CDF	0.2126	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.62	2.29	0.8707	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0081603		0.0081603		1	0.706	0.4252	Non-Significant Effect			
Error	0.0924681		0.0115585		8						
Total	0.100628				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.1	23.2	0.9288	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.917	0.741	0.3337	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-005		5	0.920	0.849	0.991	0.900	0.850	1.000	0.026	6.20%	3.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-005		5	1.3	1.16	1.43	1.25	1.17	1.46	0.0492	8.50%	4.23%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-005		0.950	0.900	0.900	1.000	0.850					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-005		1.35	1.25	1.25	1.46	1.17					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 7 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 13-3196-7384		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	11d							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-006 passed proportion survived			6.59%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.63	1.86	0.124	8	CDF	0.0711	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.38	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0292718		0.0292718		1	2.65	0.1421	Non-Significant Effect		
Error		0.0883364		0.011042		8					
Total		0.117608				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.01	23.2	0.9956	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.85	0.741	0.0587	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-006		5	0.890	0.809	0.971	0.900	0.800	0.950	0.029	7.32%	6.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-006		5	1.24	1.11	1.37	1.25	1.11	1.35	0.0471	8.46%	8.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-006		0.950	0.800	0.850	0.900	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-006		1.35	1.11	1.17	1.25	1.35					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 8 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 19-2658-9148		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	10d 20h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Angular (Corrected)		C > T			59517-007 passed proportion survived					6.98%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.326	1.86	0.129	8	CDF	0.6237	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.21	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0012877		0.0012877		1	0.106	0.7526	Non-Significant Effect			
Error	0.0968143		0.0121018		8						
Total	0.098102				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.2	23.2	0.8650	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.79	0.741	0.0108	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
59517-007		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
59517-007		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-1.68%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
59517-007		0.900	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
59517-007		1.25	1.46	1.46	1.25	1.46					

CETIS Analytical Report

Report Date: 12 Sep-17 13:27 (p 9 of 9)
Test Code: 29519Lp | 11-3091-7112

Leptocheirus 10-d Survival and Reburial Sediment Test										EnviroSystems, Inc.	
Analysis ID: 05-8914-5430		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 12 Sep-17 12:10		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	15d 4h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	11d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Data Transform		Alt Hyp	Comparison Result				PMSD				
Angular (Corrected)		C > T	29517-008 failed proportion survived				6.03%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.32	1.86	0.115	8	CDF	0.0245	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5851	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0514822		0.0514822		1	5.37	0.0491	Significant Effect			
Error	0.0766331		0.0095791		8						
Total	0.128115				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7776	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.878	0.741	0.1227	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.950	0.888	1.000	0.950	0.900	1.000	0.022	5.26%	0.00%
29517-008		5	0.870	0.787	0.953	0.900	0.750	0.900	0.030	7.71%	8.42%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.35	1.22	1.48	1.35	1.25	1.46	0.0469	7.76%	0.00%
29517-008		5	1.21	1.1	1.32	1.25	1.05	1.25	0.0404	7.47%	10.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	1.000	0.900	0.900	1.000					
29517-008		0.900	0.750	0.900	0.900	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.46	1.25	1.25	1.46					
29517-008		1.25	1.05	1.25	1.25	1.25					

Sample Reading Order for Water Quality Measurements

Study: 29519

Client: AECOM

Project: New Haven Harbor

Reading order for days 0 and 10

Reading Number	Field ID	Replicate	Lab Code
1	Laboratory Control Sediment	surrogate	29519-000
2		A	
3		B	
4		C	
5		D	
6		E	
7	CLDS Reference Sediment	surrogate	29517-009
8		A	
9		B	
10		C	
11		D	
12		E	
13	Composite 1	surrogate	29517-001
14		A	
15		B	
16		C	
17		D	
18		E	
19	Composite 2	surrogate	29517-002
20		A	
21		B	
22		C	
23		D	
24		E	
25	Composite 3	surrogate	29517-003
26		A	
27		B	
28		C	
29		D	
30		E	
31	Composite 4	surrogate	29517-004
32		A	
33		B	
34		C	
35		D	
36		E	
37	Composite 5	surrogate	29517-005
38		A	
39		B	
40		C	
41		D	
42		E	
43	Composite 6	surrogate	29517-006
44		A	
45		B	
46		C	
47		D	
48		E	

Sample Reading Order for Water Quality Measurements

Study: 29519

Client: AECOM

Project: New Haven Harbor

49	Composite 7	surrogate	29517-007
50		A	
51		B	
52		C	
53		D	
54		E	
55	Composite 8	surrogate	29517-008
56		A	
57		B	
58		C	
59		D	
60		E	

Reading order for days 1 - 9

Reading Number	Field ID	Replicate	Lab Code
1	Laboratory Control Sediment	surrogate	29519-000
2	CLDS Reference Sediment	surrogate	29517-009
3	Composite 1	surrogate	29517-001
4	Composite 2	surrogate	29517-002
5	Composite 3	surrogate	29517-003
6	Composite 4	surrogate	29517-004
7	Composite 5	surrogate	29517-005
8	Composite 6	surrogate	29517-006
9	Composite 7	surrogate	29517-007
10	Composite 8	surrogate	29517-008

STUDY: 29519
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	Surrogate	00	9/1/2017 08:38:08	21.3	7.77	97.8	7.82	30643	19.06
Laboratory Control	A	00	9/1/2017 08:38:30	21.3	7.83	98.6	7.84	30764	19.14
Laboratory Control	B	00	9/1/2017 08:38:48	21.3	7.16	90.2	7.76	30696	19.09
Laboratory Control	C	00	9/1/2017 08:39:14	21.3	7.78	98	7.85	30853	19.2
Laboratory Control	D	00	9/1/2017 08:39:27	21.3	7.78	98.1	7.85	30625	19.05
Laboratory Control	E	00	9/1/2017 08:39:49	21.3	7.75	97.6	7.85	30637	19.05
Reference Site	Surrogate	00	9/1/2017 08:41:58	21.4	7.49	94.5	7.84	30790	19.16
Reference Site	A	00	9/1/2017 08:42:16	21.3	7.53	94.9	7.86	30714	19.11
Reference Site	B	00	9/1/2017 08:42:29	21.3	7.69	97	7.88	30884	19.22
Reference Site	C	00	9/1/2017 08:42:48	21.2	7.65	96.5	7.87	31425	19.6
Reference Site	D	00	9/1/2017 08:43:04	21.3	7.66	96.5	7.88	30743	19.13
Reference Site	E	00	9/1/2017 08:43:25	21.3	7.63	96.3	7.89	31182	19.43
Composite 1	Surrogate	00	9/1/2017 08:44:07	21.3	7.51	94.7	7.84	30794	19.16
Composite 1	A	00	9/1/2017 08:44:24	21.3	7.69	96.9	7.87	30660	19.07
Composite 1	B	00	9/1/2017 08:44:43	21.3	7.61	96	7.86	30838	19.19
Composite 1	C	00	9/1/2017 08:44:58	21.3	7.53	94.9	7.87	30696	19.09
Composite 1	D	00	9/1/2017 08:45:15	21.3	7.65	96.4	7.87	30593	19.02
Composite 1	E	00	9/1/2017 08:45:38	21.3	7.61	95.9	7.87	30703	19.1
Composite 2	Surrogate	00	9/1/2017 08:46:13	21.3	7.46	94.1	7.89	30701	19.1
Composite 2	A	00	9/1/2017 08:46:35	21.3	7.6	96	7.97	31220	19.45
Composite 2	B	00	9/1/2017 08:46:50	21.3	7.59	95.6	7.95	30731	19.12
Composite 2	C	00	9/1/2017 08:47:07	21.3	7.64	96.2	7.94	30687	19.09
Composite 2	D	00	9/1/2017 08:47:29	21.3	7.66	96.5	7.95	30696	19.1
Composite 2	E	00	9/1/2017 08:47:42	21.3	7.65	96.4	7.95	30692	19.09
Composite 3	Surrogate	00	9/1/2017 08:48:06	21.3	7.46	94.1	7.91	30847	19.2
Composite 3	A	00	9/1/2017 08:48:26	21.3	7.59	95.7	7.91	30744	19.13
Composite 3	B	00	9/1/2017 08:48:42	21.3	7.55	95.4	7.91	31235	19.46
Composite 3	C	00	9/1/2017 08:49:03	21.3	7.6	95.8	7.89	30721	19.11
Composite 3	D	00	9/1/2017 08:49:19	21.3	7.6	95.8	7.91	30780	19.15
Composite 3	E	00	9/1/2017 08:49:36	21.3	7.62	96	7.91	30739	19.12
Composite 4	Surrogate	00	9/1/2017 08:50:36	21.3	7.22	90.9	7.87	30388	18.88
Composite 4	A	00	9/1/2017 08:50:54	21.3	7.59	95.6	7.95	30508	18.97
Composite 4	B	00	9/1/2017 08:51:14	21.3	7.58	95.4	7.98	30326	18.84
Composite 4	C	00	9/1/2017 08:51:36	21.3	7.38	92.8	7.96	30262	18.8
Composite 4	D	00	9/1/2017 08:51:59	21.3	7.58	95.4	7.96	30257	18.79
Composite 4	E	00	9/1/2017 08:52:16	21.3	7.61	95.7	7.98	30289	18.82
Composite 5	Surrogate	00	9/1/2017 08:52:38	21.3	7.42	93.5	7.99	30488	18.95
Composite 5	A	00	9/1/2017 08:52:53	21.3	7.56	95.1	8	30398	18.89
Composite 5	B	00	9/1/2017 08:53:07	21.3	7.59	95.6	8.02	30493	18.96
Composite 5	C	00	9/1/2017 08:53:20	21.3	7.6	95.6	8.03	30426	18.91
Composite 5	D	00	9/1/2017 08:53:41	21.3	7.42	93.4	8.01	30359	18.86

STUDY: 29519
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 5	E	00	9/1/2017 08:53:54	21.3	7.48	94.2	8.02	30602	19.03
Composite 6	Surrogate	00	9/1/2017 08:54:12	21.3	7.45	93.8	8	30642	19.06
Composite 6	A	00	9/1/2017 08:54:32	21.3	7.52	94.6	7.99	30439	18.92
Composite 6	B	00	9/1/2017 08:54:46	21.3	7.53	94.9	8	30633	19.05
Composite 6	C	00	9/1/2017 08:55:04	21.3	7.59	95.5	8.03	30465	18.94
Composite 6	D	00	9/1/2017 08:55:26	21.3	7.42	93.4	7.98	30355	18.86
Composite 6	E	00	9/1/2017 08:55:39	21.3	7.62	95.9	8	30466	18.94
Composite 7	Surrogate	00	9/1/2017 08:56:00	21.3	7.44	93.6	7.91	30521	18.98
Composite 7	A	00	9/1/2017 08:56:14	21.3	7.4	93.2	7.95	30713	19.11
Composite 7	B	00	9/1/2017 08:56:48	21.3	7.54	95	7.98	30526	18.98
Composite 7	C	00	9/1/2017 08:57:14	21.3	7.58	95.5	7.96	30500	18.96
Composite 7	D	00	9/1/2017 08:57:29	21.3	7.52	94.6	7.93	30416	18.9
Composite 7	E	00	9/1/2017 08:57:43	21.3	7.53	94.8	7.96	30423	18.91
Composite 8	Surrogate	00	9/1/2017 08:58:06	21.3	7.47	94.1	8	30587	19.02
Composite 8	A	00	9/1/2017 08:58:20	21.3	7.56	95.2	8.01	30510	18.97
Composite 8	B	00	9/1/2017 08:58:40	21.3	7.59	95.5	8.02	30484	18.95
Composite 8	C	00	9/1/2017 08:58:53	21.3	7.53	94.7	8.01	30381	18.88
Composite 8	D	00	9/1/2017 08:59:08	21.3	7.54	94.8	8	30384	18.88
Composite 8	E	00	9/1/2017 08:59:20	21.3	7.55	94.9	8.01	30396	18.89
Laboratory Control	Surrogate	01	9/2/2017 12:28:09	21.9	8.17	104.3	7.77	32772	20.51
Reference Site	Surrogate	01	9/2/2017 12:28:21	21.8	8.13	103.6	7.82	32979	20.66
Composite 1	Surrogate	01	9/2/2017 12:28:43	22.1	7.88	100.9	7.85	33132	20.76
Composite 2	Surrogate	01	9/2/2017 12:29:03	22.2	7.7	98.7	7.9	32738	20.49
Composite 3	Surrogate	01	9/2/2017 12:29:20	22.2	7.58	97.2	7.89	32727	20.48
Composite 4	Surrogate	01	9/2/2017 12:29:48	22.2	7.37	94	7.89	31297	19.5
Composite 5	Surrogate	01	9/2/2017 12:30:11	22.2	7.59	96.8	7.96	31354	19.54
Composite 6	Surrogate	01	9/2/2017 12:30:27	22.1	7.47	95.2	7.97	31720	19.79
Composite 7	Surrogate	01	9/2/2017 12:30:50	22	7.35	93.5	7.87	31600	19.71
Composite 8	Surrogate	01	9/2/2017 12:31:05	22.1	3.74	47.6	7.87	31645	19.74
Laboratory Control	Surrogate	02	9/3/2017 12:42:27	20.6	7.59	94.5	7.99	31147	19.41
Reference Site	Surrogate	02	9/3/2017 12:42:43	20.6	7.62	95	7.94	31215	19.46
Composite 1	Surrogate	02	9/3/2017 12:43:07	20.6	7.65	95.3	7.94	31279	19.5
Composite 2	Surrogate	02	9/3/2017 12:43:23	20.6	7.48	93.1	7.96	31113	19.39
Composite 3	Surrogate	02	9/3/2017 12:43:41	20.6	7.59	94.4	7.94	31115	19.39
Composite 4	Surrogate	02	9/3/2017 12:44:05	20.6	7.26	90.1	7.92	30341	18.86
Composite 5	Surrogate	02	9/3/2017 12:44:28	20.6	7.57	94	7.99	30430	18.92
Composite 6	Surrogate	02	9/3/2017 12:44:52	20.5	7.53	93.5	7.99	30690	19.1
Composite 7	Surrogate	02	9/3/2017 12:45:13	20.5	7.54	93.6	7.89	30569	19.02
Composite 8	Surrogate	02	9/3/2017 12:45:32	20.5	7.63	94.6	8.09	30621	19.05

STUDY: 29519
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ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay
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	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	Surrogate	03	9/4/2017 10:01:21	20.4	7.49	93.2	8.03	30572	19.02
Reference Site	Surrogate	03	9/4/2017 10:01:42	20.4	7.43	92.4	7.95	30615	19.05
Composite 1	Surrogate	03	9/4/2017 10:02:05	20.4	7.56	94	7.93	30377	18.89
Composite 2	Surrogate	03	9/4/2017 10:02:33	20.4	7.54	93.8	7.95	30519	18.98
Composite 3	Surrogate	03	9/4/2017 10:02:57	20.4	7.36	91.6	7.93	30589	19.03
Composite 4	Surrogate	03	9/4/2017 10:03:21	20.4	6.89	85.9	7.91	31112	19.39
Composite 5	Surrogate	03	9/4/2017 10:03:47	20.4	7.38	92	8	31181	19.44
Composite 6	Surrogate	03	9/4/2017 10:04:12	20.4	7.2	89.8	7.98	31371	19.57
Composite 7	Surrogate	03	9/4/2017 10:04:34	20.4	7.19	89.6	7.87	31238	19.47
Composite 8	Surrogate	03	9/4/2017 10:04:59	20.4	7.4	92.2	8.11	30902	19.24
Laboratory Control	Surrogate	04	9/5/2017 10:31:58	20.7	7.5	95.2	7.84	33413	20.97
Reference Site	Surrogate	04	9/5/2017 10:32:20	20.7	7.47	94.7	7.89	33386	20.95
Composite 1	Surrogate	04	9/5/2017 10:32:43	20.7	7.51	95.4	7.91	33719	21.18
Composite 2	Surrogate	04	9/5/2017 10:33:00	20.7	7.39	93.8	7.95	33374	20.94
Composite 3	Surrogate	04	9/5/2017 10:33:14	20.7	7.29	92.5	7.92	33517	21.04
Composite 4	Surrogate	04	9/5/2017 10:33:29	20.6	6.97	88.9	7.91	34865	21.98
Composite 5	Surrogate	04	9/5/2017 10:33:46	20.7	7.18	91.6	8.03	34980	22.06
Composite 6	Surrogate	04	9/5/2017 10:34:06	20.7	7.02	89.6	7.97	35193	22.2
Composite 7	Surrogate	04	9/5/2017 10:34:22	20.7	6.98	89.2	7.84	35231	22.23
Composite 8	Surrogate	04	9/5/2017 10:34:35	20.7	7.26	92.8	8.06	35366	22.33
Laboratory Control	Surrogate	05	9/6/2017 10:07:13	21	7.51	95.3	7.87	32998	20.68
Reference Site	Surrogate	05	9/6/2017 10:07:37	21	7.4	93.8	7.89	32948	20.65
Composite 1	Surrogate	05	9/6/2017 10:07:57	21	7.45	94.6	7.91	33070	20.73
Composite 2	Surrogate	05	9/6/2017 10:08:12	21	7.35	93.2	7.95	32941	20.64
Composite 3	Surrogate	05	9/6/2017 10:08:29	21	7.31	92.7	7.93	32983	20.67
Composite 4	Surrogate	05	9/6/2017 10:08:44	20.9	7.07	89.6	7.94	32935	20.64
Composite 5	Surrogate	05	9/6/2017 10:09:20	20.9	7.09	89.9	8.09	32964	20.66
Composite 6	Surrogate	05	9/6/2017 10:09:44	20.9	7.09	89.8	8.02	33057	20.72
Composite 7	Surrogate	05	9/6/2017 10:10:01	20.9	7.1	89.9	7.89	32951	20.65
Composite 8	Surrogate	05	9/6/2017 10:10:37	20.9	7.03	89.1	8.16	33003	20.68
Laboratory Control	Surrogate	06	9/7/2017 09:51:28	20.6	7.68	96.7	7.83	31871	19.91
Reference Site	Surrogate	06	9/7/2017 09:51:40	20.6	7.73	97.3	7.88	31941	19.96
Composite 1	Surrogate	06	9/7/2017 09:51:56	20.6	7.73	97.3	7.92	32023	20.01
Composite 2	Surrogate	06	9/7/2017 09:52:18	20.6	7.64	96.2	7.98	31925	19.94
Composite 3	Surrogate	06	9/7/2017 09:52:29	20.6	7.64	96.2	7.95	31960	19.97
Composite 4	Surrogate	06	9/7/2017 09:52:41	20.6	7.46	93.9	7.96	31767	19.84
Composite 5	Surrogate	06	9/7/2017 09:52:53	20.6	7.5	94.4	8.08	31814	19.87

STUDY: 29519
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ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 6	Surrogate	06	9/7/2017 09:53:09	20.6	7.38	92.8	8.04	32036	20.02
Composite 7	Surrogate	06	9/7/2017 09:53:21	20.6	7.39	92.9	7.9	31688	19.78
Composite 8	Surrogate	06	9/7/2017 09:53:42	20.6	7.43	93.4	8.17	31781	19.85
Laboratory Control	Surrogate	07	9/8/2017 09:04:07	20	7.88	97	8.03	31210	19.46
Reference Site	Surrogate	07	9/8/2017 09:04:24	20.1	7.8	96	7.98	30965	19.29
Composite 1	Surrogate	07	9/8/2017 09:04:42	20	7.86	96.7	7.98	31000	19.31
Composite 2	Surrogate	07	9/8/2017 09:04:56	20	7.74	95.3	8.01	30938	19.27
Composite 3	Surrogate	07	9/8/2017 09:05:20	20	7.64	94	7.98	30946	19.28
Composite 4	Surrogate	07	9/8/2017 09:05:46	20	7.54	92.7	7.99	30714	19.12
Composite 5	Surrogate	07	9/8/2017 09:06:05	20	7.64	93.9	8.11	30744	19.14
Composite 6	Surrogate	07	9/8/2017 09:06:23	20	7.45	91.6	8.09	30876	19.23
Composite 7	Surrogate	07	9/8/2017 09:06:55	20	7.37	90.4	7.89	30696	19.11
Composite 8	Surrogate	07	9/8/2017 09:07:25	20	7.56	92.9	8.16	30752	19.14
Laboratory Control	Surrogate	08	9/9/2017 09:56:20	19.8	8	97.3	8	31084	19.37
Reference Site	Surrogate	08	9/9/2017 09:56:43	19.8	7.95	96.7	7.96	31007	19.32
Composite 1	Surrogate	08	9/9/2017 09:57:07	19.8	7.91	96.2	7.97	30949	19.28
Composite 2	Surrogate	08	9/9/2017 09:57:20	19.8	7.79	94.8	7.99	30984	19.3
Composite 3	Surrogate	08	9/9/2017 09:57:37	19.8	7.81	94.9	7.98	30982	19.3
Composite 4	Surrogate	08	9/9/2017 09:58:05	19.7	7.65	93	7.99	30837	19.2
Composite 5	Surrogate	08	9/9/2017 09:58:29	19.7	7.8	94.8	8.11	30867	19.23
Composite 6	Surrogate	08	9/9/2017 09:58:44	19.7	7.68	93.3	8.09	30988	19.31
Composite 7	Surrogate	08	9/9/2017 09:59:04	19.7	7.46	90.6	7.93	30879	19.23
Composite 8	Surrogate	08	9/9/2017 09:59:23	19.7	7.61	92.4	8.08	30971	19.3
Laboratory Control	Surrogate	09	9/10/2017 10:27:11	20	8.05	98.2	7.93	31656	19.76
Reference Site	Surrogate	09	9/10/2017 10:27:25	20	8.06	98.4	7.94	31631	19.75
Composite 1	Surrogate	09	9/10/2017 10:27:33	20	8.02	97.9	7.96	31744	19.82
Composite 2	Surrogate	09	9/10/2017 10:27:45	20	7.96	97.1	8	31659	19.77
Composite 3	Surrogate	09	9/10/2017 10:27:55	20	7.97	97.2	7.99	31693	19.79
Composite 4	Surrogate	09	9/10/2017 10:28:09	20	7.74	94.6	7.99	32204	20.14
Composite 5	Surrogate	09	9/10/2017 10:28:21	20	7.79	95.3	8.09	32231	20.16
Composite 6	Surrogate	09	9/10/2017 10:28:41	20	7.68	93.9	8.1	32305	20.21
Composite 7	Surrogate	09	9/10/2017 10:28:57	20	7.65	93.5	7.92	32261	20.18
Composite 8	Surrogate	09	9/10/2017 10:29:12	20	7.73	94.5	8.1	32283	20.2
Laboratory Control	Surrogate	10	9/11/2017 08:51:24	19.8	7.98	97.2	7.99	31303	19.52
Laboratory Control	A	10	9/11/2017 08:51:34	19.8	8.02	97.7	7.96	31345	19.55
Laboratory Control	B	10	9/11/2017 08:51:49	19.8	7.66	93.3	7.85	31306	19.53
Laboratory Control	C	10	9/11/2017 08:52:05	19.8	7.98	97.2	7.9	31408	19.6

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	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	D	10	9/11/2017 08:52:15	19.8	8.01	97.6	7.91	31328	19.54
Laboratory Control	E	10	9/11/2017 08:52:25	19.8	7.99	97.2	7.91	31325	19.54
Reference Site	Surrogate	10	9/11/2017 08:52:52	19.8	7.87	95.9	7.93	31310	19.53
Reference Site	A	10	9/11/2017 08:53:13	19.8	7.98	97.2	7.96	31276	19.5
Reference Site	B	10	9/11/2017 08:53:24	19.8	7.92	96.4	7.96	31360	19.56
Reference Site	C	10	9/11/2017 08:53:36	19.8	7.92	96.4	7.95	31418	19.6
Reference Site	D	10	9/11/2017 08:53:49	19.8	7.92	96.5	7.95	31323	19.54
Reference Site	E	10	9/11/2017 08:53:59	19.8	7.91	96.3	7.96	31512	19.67
Composite 1	Surrogate	10	9/11/2017 08:54:14	19.8	7.89	96.2	7.97	31397	19.59
Composite 1	A	10	9/11/2017 08:54:24	19.8	7.93	96.6	7.98	31265	19.5
Composite 1	B	10	9/11/2017 08:54:32	19.8	7.87	95.9	7.98	31309	19.53
Composite 1	C	10	9/11/2017 08:54:44	19.8	7.87	95.8	7.98	31324	19.54
Composite 1	D	10	9/11/2017 08:55:11	19.8	7.9	96.2	7.99	31279	19.51
Composite 1	E	10	9/11/2017 08:55:26	19.8	7.9	96.2	7.98	31377	19.57
Composite 2	Surrogate	10	9/11/2017 08:55:49	19.8	7.82	95.2	8.03	31297	19.52
Composite 2	A	10	9/11/2017 08:56:06	19.8	7.78	94.8	8.02	31302	19.52
Composite 2	B	10	9/11/2017 08:56:28	19.8	7.8	95	8.06	31326	19.54
Composite 2	C	10	9/11/2017 08:56:45	19.8	7.8	95	8.06	31424	19.61
Composite 2	D	10	9/11/2017 08:57:00	19.8	7.88	95.9	8.06	31355	19.56
Composite 2	E	10	9/11/2017 08:57:18	19.8	7.83	95.3	8.09	31368	19.57
Composite 3	Surrogate	10	9/11/2017 08:57:43	19.8	7.84	95.4	8	31321	19.54
Composite 3	A	10	9/11/2017 08:58:19	19.8	7.83	95.3	8	31292	19.52
Composite 3	B	10	9/11/2017 08:58:45	19.8	7.84	95.5	8	31336	19.55
Composite 3	C	10	9/11/2017 08:59:07	19.8	7.81	95.1	7.99	31397	19.59
Composite 3	D	10	9/11/2017 08:59:24	19.8	7.88	96	7.99	31412	19.6
Composite 3	E	10	9/11/2017 08:59:39	19.8	7.91	96.4	8.01	31445	19.62
Composite 4	Surrogate	10	9/11/2017 09:00:06	19.8	7.54	92	8.01	31971	19.98
Composite 4	A	10	9/11/2017 09:00:24	19.8	7.77	94.9	8.06	31958	19.97
Composite 4	B	10	9/11/2017 09:00:42	19.8	7.77	94.9	8.13	31964	19.98
Composite 4	C	10	9/11/2017 09:01:06	19.8	7.74	94.4	8.12	31964	19.98
Composite 4	D	10	9/11/2017 09:01:21	19.8	7.84	95.7	8.12	32069	20.05
Composite 4	E	10	9/11/2017 09:01:35	19.8	7.82	95.5	8.13	32130	20.09
Composite 5	Surrogate	10	9/11/2017 09:01:56	19.8	7.69	93.9	8.14	32056	20.04
Composite 5	A	10	9/11/2017 09:02:16	19.8	7.64	93.3	8.22	31996	20
Composite 5	B	10	9/11/2017 09:02:33	19.8	7.65	93.4	8.19	31988	19.99
Composite 5	C	10	9/11/2017 09:02:48	19.8	7.53	92	8.26	32102	20.07
Composite 5	D	10	9/11/2017 09:03:00	19.8	7.47	91.2	8.19	32129	20.09
Composite 5	E	10	9/11/2017 09:03:11	19.8	7.47	91.2	8.15	32160	20.11
Composite 6	Surrogate	10	9/11/2017 09:03:38	19.8	7.6	92.8	8.14	32140	20.1
Composite 6	A	10	9/11/2017 09:04:03	19.8	7.67	93.7	8.09	32009	20.01
Composite 6	B	10	9/11/2017 09:04:22	19.8	7.73	94.4	8.04	31999	20

STUDY: 29519
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	20.6	7.60	94.5	7.98	31472	19.63
Minimum:	19.7	3.74	47.6	7.76	30257	18.79
Maximum:	22.2	8.17	104.3	8.26	35366	22.33

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
Composite 6	C	10	9/11/2017 09:04:43	19.8	7.72	94.3	8.07	32099	20.07
Composite 6	D	10	9/11/2017 09:05:00	19.8	7.72	94.3	8.08	32054	20.04
Composite 6	E	10	9/11/2017 09:05:23	19.8	7.77	94.9	8.11	32136	20.1
Composite 7	Surrogate	10	9/11/2017 09:05:46	19.8	7.6	92.8	7.93	32093	20.07
Composite 7	A	10	9/11/2017 09:05:58	19.8	7.76	94.8	7.94	32037	20.03
Composite 7	B	10	9/11/2017 09:06:18	19.8	7.83	95.6	7.94	32087	20.06
Composite 7	C	10	9/11/2017 09:06:39	19.8	7.73	94.3	7.9	32027	20.02
Composite 7	D	10	9/11/2017 09:07:08	19.8	7.63	93.1	7.87	32041	20.03
Composite 7	E	10	9/11/2017 09:07:22	19.8	7.8	95.3	7.89	32119	20.08
Composite 8	Surrogate	10	9/11/2017 09:07:47	19.8	7.66	93.6	8.1	32168	20.12
Composite 8	A	10	9/11/2017 09:08:09	19.8	7.81	95.3	8.13	32193	20.14
Composite 8	B	10	9/11/2017 09:08:26	19.8	7.78	95	8.03	32142	20.1
Composite 8	C	10	9/11/2017 09:08:41	19.8	7.68	93.8	8.11	32163	20.11
Composite 8	D	10	9/11/2017 09:08:55	19.8	7.57	92.4	8.13	32123	20.09
Composite 8	E	10	9/11/2017 09:09:14	19.8	7.74	94.5	8.13	32148	20.1

STUDY: 29519
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia		QLimit	Units	Sampled	Analyzed
			Total	Unionized				
Laboratory Control	00	29519-100	ND	0.0014	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
CLDS Reference Site	00	29519-101	ND	0.0015	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 1	00	29519-102	ND	0.0015	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 2	00	29519-103	2	0.0653	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 3	00	29519-104	0.37	0.0126	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 4	00	29519-105	1.6	0.0500	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 5	00	29519-106	3.6	0.1468	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 6	00	29519-107	7.4	0.3085	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 7	00	29519-108	8.4	0.2869	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 8	00	29519-109	3.8	0.1584	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Laboratory Control	03	29519-200	0.17	0.0071	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
CLDS Reference Site	03	29519-201	0.6	0.0210	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 1	03	29519-202	0.14	0.0047	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 2	03	29519-203	ND	0.0018	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 3	03	29519-204	ND	0.0017	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 4	03	29519-205	0.85	0.0273	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 5	03	29519-206	2.5	0.0979	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 6	03	29519-207	2.1	0.0787	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 7	03	29519-208	1.1	0.0323	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 8	03	29519-209	0.43	0.0214	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Laboratory Control	10	29519-300	ND	0.0018	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
CLDS Reference Site	10	29519-301	ND	0.0016	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 1	10	29519-302	ND	0.0018	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 2	10	29519-303	ND	0.0020	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 3	10	29519-304	ND	0.0019	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 4	10	29519-305	ND	0.0019	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 5	10	29519-306	ND	0.0026	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 6	10	29519-307	0.12	0.0061	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 7	10	29519-308	0.19	0.0061	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 8	10	29519-309	ND	0.0023	0.1	mg/L as N	09/11/17 1000	09/19/17 1239

STUDY: 29519
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *Leptocheirus plumulosus* 10 Day Solid Phase Sediment Assay

TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia		QLimit	Units	Sampled	Analyzed
			Total	Unionized				
Laboratory Control	00	29519-111	0.4	0.0036	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
CLDS Reference Site	00	29519-112	ND	0.0008	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 1	00	29519-113	3	0.0549	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 2	00	29519-114	6.7	0.1342	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 3	00	29519-115	5.1	0.0635	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 4	00	29519-116	7	0.1281	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 5	00	29519-117	17	0.2907	0.1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 6	00	29519-118	70	1.6419	1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 7	00	29519-119	51	0.7788	1	mg/L as N	09/01/17 1130	09/11/17 1030
Composite 8	00	29519-120	45	0.8617	1	mg/L as N	09/01/17 1130	09/11/17 1030
Laboratory Control	03	29519-211	0.13	0.0015	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
CLDS Reference Site	03	29519-212	ND	0.0008	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 1	03	29519-213	2.5	0.0573	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 2	03	29519-214	2.8	0.0458	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 3	03	29519-215	2	0.0198	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 4	03	29519-216	1.9	0.0221	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 5	03	29519-217	7.1	0.0688	0.1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 6	03	29519-218	38	0.4950	1	mg/L as N	09/04/17 1030	09/11/17 1030
Composite 7	03	29519-219	17.8	0.1043	0.1	mg/L as N	09/04/17 1030	9/07/17 1043
Composite 8	03	29519-220	13	0.1150	0.1	mg/L as N	09/04/17 1030	9/07/17 1043
Laboratory Control	10	29519-311	ND	0.0005	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
CLDS Reference Site	10	29519-312	ND	0.0007	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 1	10	29519-313	0.17	0.0025	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 2	10	29519-314	ND	0.0003	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 3	10	29519-315	1.2	0.0088	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 4	10	29519-316	1.4	0.0088	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 5	10	29519-317	1.4	0.0046	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 6	10	29519-318	0.95	0.0078	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 7	10	29519-319	1.3	0.0073	0.1	mg/L as N	09/11/17 1000	09/19/17 1239
Composite 8	10	29519-320	11	0.0447	0.1	mg/L as N	09/11/17 1000	09/19/17 1239

Pore Water pH Record

Study: 29519
Client: AECOM
Project: New Haven Harbor

Day 0 Pore Water Quality

Sample	Temperature	pH value
Laboratory Control Sediment	22	7.30
CLDS Reference Site Sediment		7.53
Composite 1		7.61
Composite 2		7.65
Composite 3		7.44
Composite 4		7.61
Composite 5		7.58
Composite 6		7.72
Composite 7		7.53
Composite 8	↓	7.63
Date: 09/01/17 pH Meter ID: 470 Initial: BG		

Day 3 Pore Water Quality

Sample	Temperature	pH value
Laboratory Control Sediment	22	7.41
CLDS Reference Site Sediment		7.54
Composite 1		7.71
Composite 2		7.56
Composite 3		7.34
Composite 4		7.41
Composite 5		7.33
Composite 6		7.46
Composite 7		7.11
Composite 8	↓	7.29
Date: 09/12/17 pH Meter ID: 470 Initial: MS		

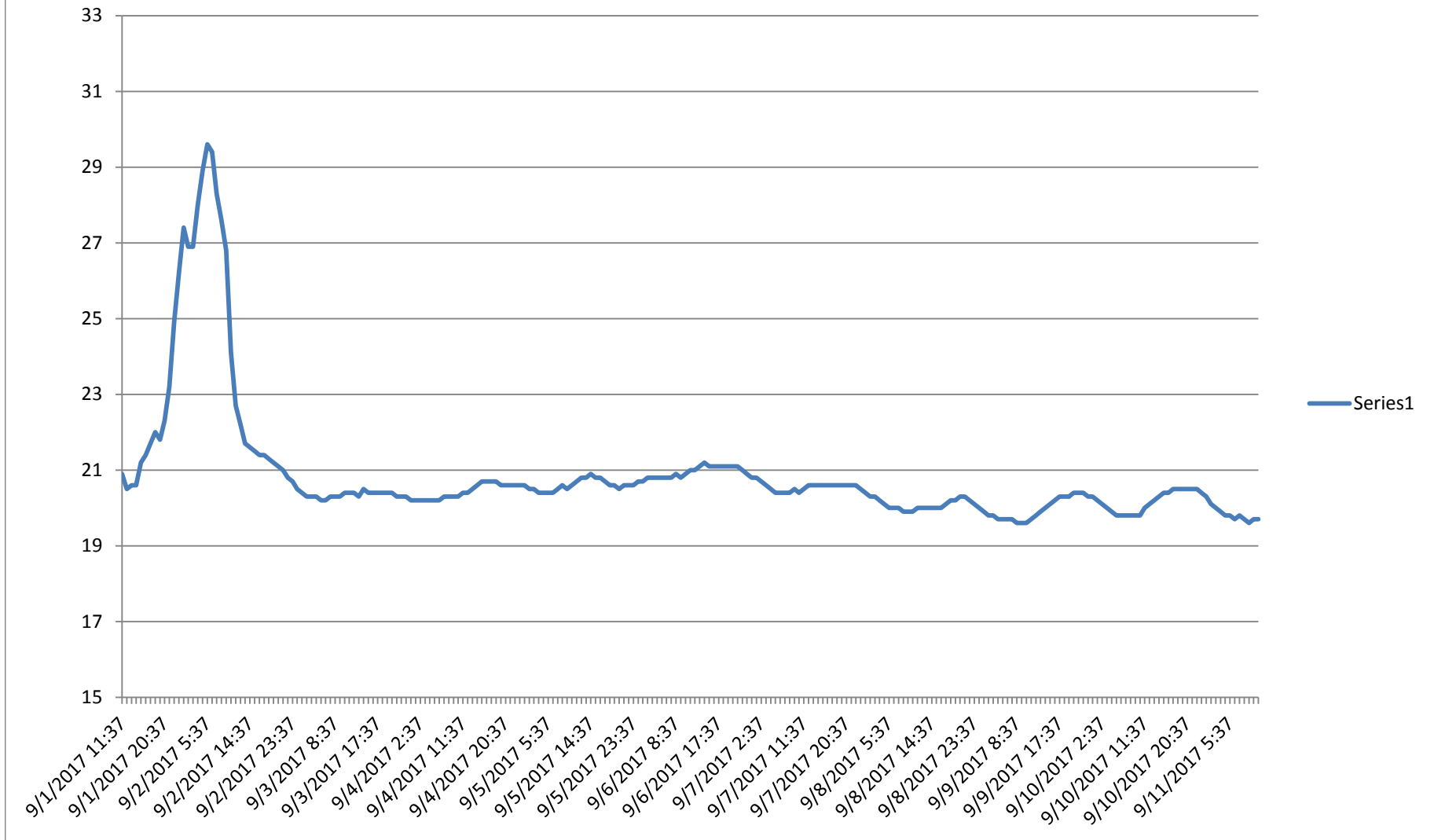
Pore Water pH Record

Study: 29519 Client: AECOM Project: New Haven Harbor

Day 10 Pore Water Quality

Sample	Temperature	pH value
Laboratory Control Sediment	22	7.32
CLDS Reference Site Sediment		7.46
Composite 1		7.52
Composite 2		7.09
Composite 3		7.21
Composite 4		7.14
Composite 5		6.86
Composite 6		7.26
Composite 7		7.09
Composite 8	↓	6.95
Date: 9/11/17 pH Meter ID: 470 Initial: ke		

**29519 and 29520 - New Haven Harbor FNP
10 day *L. plumulosus* and *A. bahia* Solid Phase Assay
Hourly Temperature Data**



STUDY: 29519 & 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
Serial #: 10015860

°C
Mean: 20.8
Minimum: 19.6
Maximum: 29.6

29519-20	Time	Celsius(°C)
1	9/1/2017 11:37	20.9
2	9/1/2017 12:37	20.5
3	9/1/2017 13:37	20.6
4	9/1/2017 14:37	20.6
5	9/1/2017 15:37	21.2
6	9/1/2017 16:37	21.4
7	9/1/2017 17:37	21.7
8	9/1/2017 18:37	22
9	9/1/2017 19:37	21.8
10	9/1/2017 20:37	22.3
11	9/1/2017 21:37	23.2
12	9/1/2017 22:37	24.9
13	9/1/2017 23:37	26.2
14	9/2/2017 0:37	27.4
15	9/2/2017 1:37	26.9
16	9/2/2017 2:37	26.9
17	9/2/2017 3:37	28
18	9/2/2017 4:37	28.9
19	9/2/2017 5:37	29.6
20	9/2/2017 6:37	29.4
21	9/2/2017 7:37	28.3
22	9/2/2017 8:37	27.6
23	9/2/2017 9:37	26.8
24	9/2/2017 10:37	24.1
25	9/2/2017 11:37	22.7
26	9/2/2017 12:37	22.2
27	9/2/2017 13:37	21.7
28	9/2/2017 14:37	21.6
29	9/2/2017 15:37	21.5
30	9/2/2017 16:37	21.4
31	9/2/2017 17:37	21.4
32	9/2/2017 18:37	21.3
33	9/2/2017 19:37	21.2
34	9/2/2017 20:37	21.1
35	9/2/2017 21:37	21
36	9/2/2017 22:37	20.8
37	9/2/2017 23:37	20.7

STUDY: 29519 & 29520
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
 Serial #: 10015860

°C
 Mean: 20.8
 Minimum: 19.6
 Maximum: 29.6

29519-20	Time	Celsius(°C)
38	9/3/2017 0:37	20.5
39	9/3/2017 1:37	20.4
40	9/3/2017 2:37	20.3
41	9/3/2017 3:37	20.3
42	9/3/2017 4:37	20.3
43	9/3/2017 5:37	20.2
44	9/3/2017 6:37	20.2
45	9/3/2017 7:37	20.3
46	9/3/2017 8:37	20.3
47	9/3/2017 9:37	20.3
48	9/3/2017 10:37	20.4
49	9/3/2017 11:37	20.4
50	9/3/2017 12:37	20.4
51	9/3/2017 13:37	20.3
52	9/3/2017 14:37	20.5
53	9/3/2017 15:37	20.4
54	9/3/2017 16:37	20.4
55	9/3/2017 17:37	20.4
56	9/3/2017 18:37	20.4
57	9/3/2017 19:37	20.4
58	9/3/2017 20:37	20.4
59	9/3/2017 21:37	20.3
60	9/3/2017 22:37	20.3
61	9/3/2017 23:37	20.3
62	9/4/2017 0:37	20.2
63	9/4/2017 1:37	20.2
64	9/4/2017 2:37	20.2
65	9/4/2017 3:37	20.2
66	9/4/2017 4:37	20.2
67	9/4/2017 5:37	20.2
68	9/4/2017 6:37	20.2
69	9/4/2017 7:37	20.3
70	9/4/2017 8:37	20.3
71	9/4/2017 9:37	20.3
72	9/4/2017 10:37	20.3
73	9/4/2017 11:37	20.4
74	9/4/2017 12:37	20.4

STUDY: 29519 & 29520
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
 Serial #: 10015860

°C
 Mean: 20.8
 Minimum: 19.6
 Maximum: 29.6

29519-20	Time	Celsius(°C)
75	9/4/2017 13:37	20.5
76	9/4/2017 14:37	20.6
77	9/4/2017 15:37	20.7
78	9/4/2017 16:37	20.7
79	9/4/2017 17:37	20.7
80	9/4/2017 18:37	20.7
81	9/4/2017 19:37	20.6
82	9/4/2017 20:37	20.6
83	9/4/2017 21:37	20.6
84	9/4/2017 22:37	20.6
85	9/4/2017 23:37	20.6
86	9/5/2017 0:37	20.6
87	9/5/2017 1:37	20.5
88	9/5/2017 2:37	20.5
89	9/5/2017 3:37	20.4
90	9/5/2017 4:37	20.4
91	9/5/2017 5:37	20.4
92	9/5/2017 6:37	20.4
93	9/5/2017 7:37	20.5
94	9/5/2017 8:37	20.6
95	9/5/2017 9:37	20.5
96	9/5/2017 10:37	20.6
97	9/5/2017 11:37	20.7
98	9/5/2017 12:37	20.8
99	9/5/2017 13:37	20.8
100	9/5/2017 14:37	20.9
101	9/5/2017 15:37	20.8
102	9/5/2017 16:37	20.8
103	9/5/2017 17:37	20.7
104	9/5/2017 18:37	20.6
105	9/5/2017 19:37	20.6
106	9/5/2017 20:37	20.5
107	9/5/2017 21:37	20.6
108	9/5/2017 22:37	20.6
109	9/5/2017 23:37	20.6
110	9/6/2017 0:37	20.7
111	9/6/2017 1:37	20.7

STUDY: 29519 & 29520
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
 Serial #: 10015860

°C
 Mean: 20.8
 Minimum: 19.6
 Maximum: 29.6

29519-20	Time	Celsius(°C)
112	9/6/2017 2:37	20.8
113	9/6/2017 3:37	20.8
114	9/6/2017 4:37	20.8
115	9/6/2017 5:37	20.8
116	9/6/2017 6:37	20.8
117	9/6/2017 7:37	20.8
118	9/6/2017 8:37	20.9
119	9/6/2017 9:37	20.8
120	9/6/2017 10:37	20.9
121	9/6/2017 11:37	21
122	9/6/2017 12:37	21
123	9/6/2017 13:37	21.1
124	9/6/2017 14:37	21.2
125	9/6/2017 15:37	21.1
126	9/6/2017 16:37	21.1
127	9/6/2017 17:37	21.1
128	9/6/2017 18:37	21.1
129	9/6/2017 19:37	21.1
130	9/6/2017 20:37	21.1
131	9/6/2017 21:37	21.1
132	9/6/2017 22:37	21
133	9/6/2017 23:37	20.9
134	9/7/2017 0:37	20.8
135	9/7/2017 1:37	20.8
136	9/7/2017 2:37	20.7
137	9/7/2017 3:37	20.6
138	9/7/2017 4:37	20.5
139	9/7/2017 5:37	20.4
140	9/7/2017 6:37	20.4
141	9/7/2017 7:37	20.4
142	9/7/2017 8:37	20.4
143	9/7/2017 9:37	20.5
144	9/7/2017 10:37	20.4
145	9/7/2017 11:37	20.5
146	9/7/2017 12:37	20.6
147	9/7/2017 13:37	20.6
148	9/7/2017 14:37	20.6

STUDY: 29519 & 29520
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
 Serial #: 10015860

°C
 Mean: 20.8
 Minimum: 19.6
 Maximum: 29.6

29519-20	Time	Celsius(°C)
149	9/7/2017 15:37	20.6
150	9/7/2017 16:37	20.6
151	9/7/2017 17:37	20.6
152	9/7/2017 18:37	20.6
153	9/7/2017 19:37	20.6
154	9/7/2017 20:37	20.6
155	9/7/2017 21:37	20.6
156	9/7/2017 22:37	20.6
157	9/7/2017 23:37	20.5
158	9/8/2017 0:37	20.4
159	9/8/2017 1:37	20.3
160	9/8/2017 2:37	20.3
161	9/8/2017 3:37	20.2
162	9/8/2017 4:37	20.1
163	9/8/2017 5:37	20
164	9/8/2017 6:37	20
165	9/8/2017 7:37	20
166	9/8/2017 8:37	19.9
167	9/8/2017 9:37	19.9
168	9/8/2017 10:37	19.9
169	9/8/2017 11:37	20
170	9/8/2017 12:37	20
171	9/8/2017 13:37	20
172	9/8/2017 14:37	20
173	9/8/2017 15:37	20
174	9/8/2017 16:37	20
175	9/8/2017 17:37	20.1
176	9/8/2017 18:37	20.2
177	9/8/2017 19:37	20.2
178	9/8/2017 20:37	20.3
179	9/8/2017 21:37	20.3
180	9/8/2017 22:37	20.2
181	9/8/2017 23:37	20.1
182	9/9/2017 0:37	20
183	9/9/2017 1:37	19.9
184	9/9/2017 2:37	19.8
185	9/9/2017 3:37	19.8

STUDY: 29519 & 29520
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
 Serial #: 10015860

°C
 Mean: 20.8
 Minimum: 19.6
 Maximum: 29.6

29519-20	Time	Celsius(°C)
186	9/9/2017 4:37	19.7
187	9/9/2017 5:37	19.7
188	9/9/2017 6:37	19.7
189	9/9/2017 7:37	19.7
190	9/9/2017 8:37	19.6
191	9/9/2017 9:37	19.6
192	9/9/2017 10:37	19.6
193	9/9/2017 11:37	19.7
194	9/9/2017 12:37	19.8
195	9/9/2017 13:37	19.9
196	9/9/2017 14:37	20
197	9/9/2017 15:37	20.1
198	9/9/2017 16:37	20.2
199	9/9/2017 17:37	20.3
200	9/9/2017 18:37	20.3
201	9/9/2017 19:37	20.3
202	9/9/2017 20:37	20.4
203	9/9/2017 21:37	20.4
204	9/9/2017 22:37	20.4
205	9/9/2017 23:37	20.3
206	9/10/2017 0:37	20.3
207	9/10/2017 1:37	20.2
208	9/10/2017 2:37	20.1
209	9/10/2017 3:37	20
210	9/10/2017 4:37	19.9
211	9/10/2017 5:37	19.8
212	9/10/2017 6:37	19.8
213	9/10/2017 7:37	19.8
214	9/10/2017 8:37	19.8
215	9/10/2017 9:37	19.8
216	9/10/2017 10:37	19.8
217	9/10/2017 11:37	20
218	9/10/2017 12:37	20.1
219	9/10/2017 13:37	20.2
220	9/10/2017 14:37	20.3
221	9/10/2017 15:37	20.4
222	9/10/2017 16:37	20.4

STUDY: 29519 & 29520
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: *L. plumulosus* and *A. bahia* 10 Day Solid Phase Sediment Assay

TASK: Hourly Temperature Data
Serial #: 10015860

°C
Mean: 20.8
Minimum: 19.6
Maximum: 29.6

29519-20	Time	Celsius(°C)
223	9/10/2017 17:37	20.5
224	9/10/2017 18:37	20.5
225	9/10/2017 19:37	20.5
226	9/10/2017 20:37	20.5
227	9/10/2017 21:37	20.5
228	9/10/2017 22:37	20.5
229	9/10/2017 23:37	20.4
230	9/11/2017 0:37	20.3
231	9/11/2017 1:37	20.1
232	9/11/2017 2:37	20
233	9/11/2017 3:37	19.9
234	9/11/2017 4:37	19.8
235	9/11/2017 5:37	19.8
236	9/11/2017 6:37	19.7
237	9/11/2017 7:37	19.8
238	9/11/2017 8:37	19.7
239	9/11/2017 9:37	19.6
240	9/11/2017 10:37	19.7
241	9/11/2017 11:37	19.7

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	NA, No CENAE SAP available. Methods followed per RIM requirements and as outlined in the SAP provided by prime contractor.
3. If not, were deviations documented?	Yes
4. Was the SAP approved by the New England District?	NA
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	NA, cores collected by prime contractor
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes, see revised COC
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes, see revised COC
13. Were the method blanks run and were the concentration below the acceptance criteria?	NA
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	NA
15. Were the SRM/CRM analyses within acceptance criteria?	NA
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	NA
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	NA
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	NA
19. Were surrogate recoveries within the required acceptance criteria?	NA
20. Were corrective action forms provided for all non-conforming data?	NA
21. Were all the species-specific test conditions in Appendix V met?	Yes, except as noted for temperature, dissolved oxygen and ammonia (<i>L. plumulosus</i> only).
22. Were the test-specific age requirements met for each test species?	Yes
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	Yes
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	Yes
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	Yes, except as noted for temperature, dissolved oxygen and ammonia (<i>L. plumulosus</i> only).

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species	Yes, except as noted for temperature, DO and ammonia.	Temperature spike above acceptable range on Day 0-1, and sporadic DO measurements <6 mg/L (both species). Unionized ammonia levels >0.8 mg/L in Composites 6 and 8 at assay initiation (<i>L. plumulosus</i> only).	Section 3.1, 3.2 and 3.3, and Appendix A
Test species age	Age/health within guidelines for each species (Appendix V)	Yes		Appendix A
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No	Yes		Data Package (separate cover)
Water column toxicity test: Control mortality Control abnormality	$\leq 10\%$ mean $\leq 30\%$ mussel/oyster; $\leq 40\%$ clam larvae, $\leq 30\%$ sea urchin larvae	NA		
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	$\leq 10\%$ mean (no chamber > 20%) See EPA (1994a) Section 9; Table 11.3	Yes		Appendix A

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

ASSAY REVIEW CHECKLIST

STUDY#: 29519 / 29520

CLIENT: AECOM

PROJECT: New Haven Harbor FNP Contract # W912WJ-17-D-0003

ASSAY: 10-day Solid Phase

Analyst Data Review	Date	Initials	Comments
Chains of Custody Complete	09/12/17	BG	
Sample Receipt Complete	↓	↓	
Organism Culture Sheet(s)	↓	↓	
Bench Sheets Complete (dates, times, initials, etc...)	↓	↓	
Water Quality Data Complete	↓	↓	
Weights Reported	N/A	↓	
Assay Acceptability Review	09/12/17	↓	

Technical Report Review	Date	Initials	Comments
Statistical Analysis			
Survival	9/12/17	NR	
Chemical	NA		
Statistical Analysis Reviewed	9/12/17	CB	
Data Acceptability Review	9/12/17	NR	
Support Documentation			
Temperature Data Logger	9/13/17	NR	
Daily WQ Data	9/12/17	NR	9/27/17 Rev. 1 (NR)
Overlying and/or Pore Water Chemistry	9/20/17	NR	
Other Chemical Analysis Data	NA		
Draft Report	9/14/17	NR	9/27/17 Rev. 1 (NR)
Final Report Reviewed	9/15/17	W	9/27/17 Rev. 1 (KC)
QA Audit/Review Complete			
Final Report Printed - PDF	9/21/17	NR	9/27/17 Rev. 1 (NR)
Report E-mailed / Faxed	9/21/17	NR	9/27/17 Rev. 1 (NR)
Report Logged Out	↓	↓	

**TOXICOLOGICAL EVALUATION
OF A PROPOSED DREDGE SEDIMENT:**

**New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut**

**New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021**

28 Day Sediment Toxicity and Bioaccumulation Evaluation

Prepared for:

AECOM
250 Apollo Drive
Chelmsford, Massachusetts 01824

Prepared by:

EnviroSystems, Incorporated
One Lafayette Road
Hampton, New Hampshire 03842

EnviroSystems, Inc. Master Reference 29516
Study Specific Reference 29524 / 29525
August 2017

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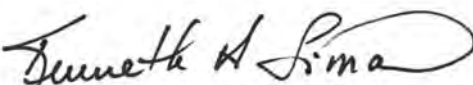
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LABORATORY STANDARDS STATEMENT

This study was performed by EnviroSystems, Incorporated at its facility in Hampton, New Hampshire. EnviroSystems' laboratory is accredited by the State of New Hampshire under the National Environmental Laboratory Accreditation (NELAC) program. Additionally, ESI is accredited under the Department of Defense (DoD) ELAP program, ISO/IEC 17025:2005, Certificate Number L2340. ESI also has an approved Laboratory Quality Assurance Plan (LQAP) covering all portions of this project. All testing conducted by EnviroSystems as part of this program was compliant with NELAC guidelines and standards. Additionally, this study was conducted in accordance with guidelines presented in the 2004 version of the New England District's Regional Implementation Manual (RIM) for Evaluation of Dredged Material Proposed for Disposal In New England Waters. Any deviations from specific elements of the RIM are detailed in the Protocol Deviation Section of this Report.

For EnviroSystems, Inc.


Kenneth A. Simon
Technical Director

December 5, 2017

Date

TOXICOLOGICAL EVALUATION OF A PROPOSED DREDGE SEDIMENT:

New Haven Harbor Federal Navigation Project
Tier III Sediment Evaluation
New Haven, Connecticut

New England District Corps of Engineers
Contract No. W912WJ-17-D-0003
TO#1 Project Number 60543021

28 Day Sediment Toxicity and Bioaccumulation Evaluation

1.0 INTRODUCTION

As part of a comprehensive plan to reduce adverse environmental impacts of ocean dumping, Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, specifies that all sediments to be discharged into ocean waters must be evaluated to define their potential impact on existing benthic communities. The United States Environmental Protection Agency (US EPA) has determined that the most effective means to make such an assessment is through the use of bioassay tests which provide a relatively direct estimate of potential impact.

This project was designed to evaluate the potential toxicity of sediments from the area of dredging proposed for the New Haven Harbor Navigation Improvement Project located in New Haven, Connecticut. Testing involved conduct of 28-day bioaccumulation evaluations using *Nereis virens* (polychaete worm) and *Macoma nasuta* (bivalve clam). Testing followed procedures established by the US EPA, US Army Corps of Engineers and the New England District Army Corps of Engineers (CENAE) for testing of dredged material. Procedures are presented in *Evaluation of Dredged Material Proposed for Ocean Disposal* (US EPA, US ACE 1991), *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (US EPA, US ACE 1998), and the *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters* (US EPA, CENAE, 2004), (RIM document).

2.0 METHODS AND MATERIALS

2.1 Sample Collection, Preservation and Storage

Sediment cores for toxicological analysis were collected by AECOM, Chelmsford, Massachusetts using vibracoring equipment from locations identified in the dredge footprint specified in the project Sampling and Analysis Plan (AECOM, 2017). Sediment samples were received under chain of custody in 5 gallon polyethylene buckets, and were composited based on the compositing scheme provided by AECOM's team. Reference site samples were also collected by AECOM from the Central Long Island Sound Disposal Site (CLDS). Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Prior to testing, samples were placed in a secure refrigerator and stored at a temperature of $4\pm2^{\circ}\text{C}$ until test initiation. Sample identification, collection and receipt information is summarized in Table 1. Sample compositing information is provided in Table 2.

Sediment for the laboratory control treatment was collected from the Hampton Estuary, Hampton, New Hampshire. The area is not known to receive any direct industrial inputs and has been used as a laboratory reference sediment in the testing of marine sediments for more than 25 years. Overlying seawater was obtained from the Hampton Estuary. Water from the estuary has been used for the culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean.

2.2 Test Organisms

M. nasuta, 15-40 mm in total length, were obtained from Aquatic Research Organisms (ARO), Hampton, New Hampshire. Organisms were field collected along the Washington coast and shipped to ARO via overnight delivery. At ESI, the clams were placed in clean holding sediment with flowing seawater and monitored for at least 24 hours prior to use. Damaged bivalves and those that would not close when prodded were discarded.

Adult *N. virens* were also obtained from ARO. Worms were collected in the field from the Damariscotta River in Boothbay Harbor, Maine and delivered to ARO. At ESI, the worms were placed in clean holding sediment with flowing seawater and monitored for at least 24 hours prior to use. Damaged and inactive worms were not used in the assay.

2.3 Bioaccumulation Evaluation

The assay was started by placing a 5-7 cm layer of sediment (control, reference or site sediment) into 10 gallon aquaria designed for flow-through testing. Overlying water was then added to each aquarium. The volume of the overlying water in these chambers was approximately 6 gallons. Water flow was adjusted to provide approximately 6 volume additions of water/day to each aquarium. Flow into each aquarium was set so that incoming water mixed throughout the tank and did not stratify as a surface layer.

M. nasuta and *N. virens* were indiscriminately selected from the pool of organisms and randomly added to the aquaria. A total of 20 worms and 30 clams were added to each of 5 replicates; species were tested in separate test chambers. Temperature was maintained at 12-16°C with no readings exceeding $\pm 3^\circ\text{C}$. Salinity was maintained at $30\pm 2\%$. The photoperiod was set at 16:8 hours light:dark. Dissolved oxygen, pH, temperature, specific conductance and salinity were measured daily in all tanks. Dissolved oxygen levels were maintained at a minimum level of $\geq 60\%$ saturation by providing aeration to all tanks from the start of the assay. Organisms were not fed during the exposure period.

After 28 days exposure, *M. nasuta* and *N. virens* were recovered from the test sediments and counted. Survival counts were used for statistical analysis. All living organisms were transferred to clean test vessels and maintained in clean seawater for 24 hours to allow for removal of sediment from the animals' digestive tract. After the depuration period, organisms were transferred to plastic bags and frozen for subsequent delivery to Alpha Analytical, Mansfield, Massachusetts for tissue analysis.

2.4 Tissue Analysis

Methods used by Alpha Analytical in the analyses of tissues generated from the bioaccumulation tests followed protocols recommended in Table 8 of the New England District RIM document with appropriate updates related to current methods. Trace metals were evaluated using EPA Method 6020A, Inductively Coupled Plasma - Mass Spectrometry (ICP-MS), and mercury was evaluated using EPA Method 7474. Organic compounds were evaluated as follows: PCB Congeners and PAH compounds by SW 846 8270D-SIM/EPA 680(M) and pesticides by SW 846 8081B. The complete analytical chemistry and quality assurance data package was provided under separate cover and in appropriate Electronic Data Deliverable (EDD) files by Alpha Analytical.

2.5 Data Analysis

Tissue chemistry data were provided by Alpha Analytical. The statistical analyses of survival and body burden data were completed at ESI using CETIS™ ver. 1.9.3.0 (Comprehensive Environmental Toxicity Information System) software to determine significant differences between the reference sediment and each site composite sample. Data were evaluated to determine homogeneity of sample variances and normality of distribution using appropriate statistics. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Statistical difference was evaluated at $\alpha = 0.05$. Per RIM guidelines, the MDL is used in instances when a compound of concern is not detected for purposes of calculating a mean concentration. MDLs used in statistical computations are adjusted for differences in tissue mass and final extract volumes used in the analysis for each sample.

Following CENAE protocol, the statistical analyses were completed for all compounds of concern (COCs) identified in the SAP and are included in Appendix A, however the findings of significance presented in the report focus only on those COCs detected in the reference sample.

2.6 Reference Toxicant Evaluation

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results provide relative health and response data while

allowing for comparison with historic data sets. Summaries of acute exposure reference toxicant assays conducted in support of this study are provided in Table 3.

3.0 RESULTS

Table 4 provides a summary of laboratory control performance and test acceptability criteria. Tables 5 and 6 provide a summary of *M. nasuta* and *N. virens* survival data and statistical analyses. Tables 7 and 8 provide summaries of body burden data and findings of significance for *M. nasuta* and *N. virens*, respectively. Laboratory bench sheets, detailed summaries of survival, body burden data and associated support data are included in Appendix A.

3.1 *Macoma nasuta*

3.1.1 Survival

Mean *M. nasuta* survival in the laboratory control sediment was 97% with a coefficient of variation (CV) of 2%. Mean survival in the CLDS reference sediment was 99% with a CV of 2%. Surviving organisms from the control and reference site provided sufficient tissue for preparation and analysis of body burdens. The endpoints met and/or exceeded requirements specified in the current version of the RIM.

After 28 days exposure, mean survival of the bivalves in the site composite sediments ranged from 96 to 99%. The statistical evaluation of the data showed no significant reduction in survival for bivalves maintained in the site composites when compared to the CLDS reference sediment, with the exception of Composite 8, however the difference in survival was <10% as compared with the CLDS reference sediment.

3.1.2 Water Quality Summary

Daily water quality data collected during the assay documented a mean temperature of 12.5°C with a range of 11.9 to 12.8°C. Confirmation temperature data collected on an hourly basis documented a mean temperature of 12.7°C with a range of 12.2 to 14.1°C. Additional daily water quality data documented salinity levels during the assay varied from 28.1 to 30.4‰ with a mean value of 29.5‰. Dissolved oxygen levels ranged from 61% to 119% with a mean level of 99% while pH ranged from 7.62 to 7.97 SU. Review of temperature and salinity data documented that all values fell within limits specified by the RIM and ESI's protocol.

3.1.3 Body Burden Analysis

Based on CENAE criteria, there were significant increases in body burdens for clams reared in site composites as compared to reference tissue for the following COCs: cadmium, chromium, copper, lead, 5 PAHs (benzo[a]anthracene, benzo[b]fluoranthene, fluoranthene, phenanthrene and pyrene) and DDE. Nickel, zinc, and endrin were the only COCs detected in reference tissue that did not demonstrate significant uptake in site composite tissue. Tissue from composites 4, 5, 6, 7 and 8 consistently demonstrated significant increases in body burden. There was also significant uptake of pyrene from composite 2.

Review of body burden data showed that the following COCs were also detected in site composite tissues, but no further analysis was required because the COC was not detected in reference tissue: 4 PAHs (benzo[a]pyrene, benzo[k]fluoranthene, chrysene, and indeno[1,2,3-cd]pyrene), 9 PCB congeners (8, 44, 52, 66, 101, 105, 118, 138 and 153) and 6 pesticides (cis-chlordane, trans-nonachlor, DDT, DDD, dieldrin and beta-Endosulfan). These COCs were primarily present at high concentrations in composites 4, 5, 6, 7 and 8.

3.2 *Nereis virens*

3.2.1 Survival

Mean *N. virens* survival in the laboratory control sediment was 92% with a coefficient of variation (CV) of 5%. Mean survival in the CLDS reference sediment was 97% with a CV of 3%. Surviving organisms from the control and reference site provided sufficient tissue for preparation and analysis of body burdens. The endpoints met and/or exceeded requirements specified in the current version of the RIM.

After 28 days exposure, mean survival of the polychaetes in the site composite sediments ranged from 93 to 98%. The statistical evaluation of the data showed no significant reduction in survival for polychaetes maintained in the site composites when compared to the CLDS reference sediment, with the exception of Composite 6 however the difference in survival was <10% as compared with the CLDS reference sediment.

3.2.2 Water Quality Summary

Daily water quality data collected during the assay documented a mean temperature of 12.4°C with a range of 11.8 to 12.6°C. Confirmation temperature data collected on an hourly basis are based on those collected for *M. nasuta*, which documented a mean temperature of 12.7°C with a range of 12.2 to 14.1°C. Please see a discussion of the hourly temperature data for *N. virens* in Section 3.3, Protocol Deviations. Additional daily water quality data documented salinity levels during the assay varied from 28.4 to 30.3‰ with a mean value of 29.5‰. Dissolved oxygen levels ranged from 61% to 102% with a mean level of 96% while pH ranged from 7.53 to 8.04 SU. Review of temperature and salinity data documented that all values fell within limits specified by the RIM and ESI's protocol.

3.2.3 Body Burden Analysis

Based on CENAE criteria, there were significant increases in body burdens for worms maintained in site composites as compared to reference site tissue for the following COCs: copper, zinc, 4 PAHs (acenaphthene, acenaphthylene, naphthalene and phenanthrene) and 2 PCB congeners (138 and 153). It should be noted that nearly all PAHs and PCBs reflect higher mean tissue concentrations in the site composites as compared with the reference composites, and the majority of the mean COC concentrations are at or near the MDL suggesting interferences with the tissue matrix, rather than actual detection of these COCs in worm tissue. This is true for zinc and 2 of the PAHs (acenaphthene and naphthalene) all were found to be significantly higher in site composite tissue as compared with reference tissue. The same is true for phenanthrene, which was detected at or near the MDL in all composites except composite 1 where the compound was detected above the reporting limit. In this instance, however, the only hit above the reporting limit (in replicate A) was identified as an outlier. Tissue from composite 4 demonstrated significant uptake of copper, and composites 6, 7 and 8 demonstrated significant increases in body burden for the PCB congeners 138 and 153. The other incidences of significant uptake of COCs from composites 2, 3, 4, 5, 6, 7 and 8 appeared to be at or near the MDL.

Review of body burden data showed that the following COCs were also detected in site composite tissues, but no further analysis was required because the COC was not detected in reference tissue: 4 PAHs (anthracene, fluoranthene, fluorene and pyrene) and 4 PCB congeners (52, 101, 180 and 187). Most of these COCs were primarily present at high concentrations in composites 4, 5, 6, 7 and 8, although many of these COCs were present at low concentrations (at or slightly above the MDL) in composite 1.

3.3 Protocol Deviations

Review of the assay data revealed only one deviation from the method and/or ESI's protocol. The hourly temperature logger was activated on Day 0 (August 29, 2017) of the *M. nasuta* assay, 2 days earlier than the *N. virens* test was initiated. Due to an oversight, the temperature logger was removed from the temperature controlled room at the end of the *M. nasuta* assay on September 26, 2017, 2 days prior to the end of the *N. virens* assay, therefore 2 days worth of hourly temperatures were not measured. There were no abnormalities observed in the daily water quality measurements that were collected during this period. This represents a deviation from ESI's SOP and a data gap, however it is the opinion of ESI's study director that this deviation did not adversely affect the outcome of the assay.

3.4 Summary

This program utilized protocols developed by the US EPA and the CENAE to assess the potential impact of the proposed dredge material collected from New Haven Harbor on the marine environment. Results of the 28-day toxicity evaluation indicate that long term exposure to Composites 8 and 6 sediment negatively impacted the survival of *M. nasuta* (clam) and *N. virens* (polychaete worm), respectively, when compared against the CLDS reference sediment, however the difference in survival was <10% in both cases.

Results of body burden data generated from recovered *M. nasuta* and *N. virens* tissue consistently showed significant uptake of COCs from composites 4, 5, 6, 7 and 8. Other COCs were also present in these composites at elevated concentrations. There were also sporadic incidences of significant uptake of COCs from composites 2 and 3, however these appeared to be at or near the MDL except in a few instances (e.g., fluorene and pyrene uptake in the clam from composite 2).

4.0 REFERENCES

- AECOM. 2017. *Draft Laboratory Testing in Support of Environmental Assessment; Sampling & Environmental Testing – New Haven Harbor FNP [Sampling and Analysis Plan]*. Chelmsford, Massachusetts. August 2017.
- US EPA, US ACE. 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual*. EPA-503/8-91/001. 204 pages.
- US EPA, US ACE. 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual*. EPA-823-B-98-004, February 1998.
- US EPA Region I, Corps of Engineers, New England District. 2004. *Regional Implementation Manual for Evaluation of Dredged Material Proposed for Disposal in New England Waters*. September 2004.

Table 1. Sample Collection and Receipt Information. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-Z	29516-001	Site	Solid	08/12/17	1350	08/18/17	1300
NHH-Z	29516-002	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-P	29516-003	Site	Solid	08/12/17	0850	08/18/17	1300
NHH-P	29516-004	Site	Solid	08/09/17	1219	08/18/17	1300
NHH-L	29516-005	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-L	29516-006	Site	Solid	08/10/17	1300	08/18/17	1300
NHH-J	29516-007	Site	Solid	08/15/17	1405	08/18/17	1300
NHH-J	29516-008	Site	Solid	08/10/17	1141	08/18/17	1300
NHH-F	29516-009	Site	Solid	08/16/17	1658	08/18/17	1300
NHH-F	29516-010	Site	Solid	08/11/17	1650	08/18/17	1300
NHH-M	29516-011	Site	Solid	08/13/17	1220	08/18/17	1300
NHH-M	29516-012	Site	Solid	08/08/17	1610	08/18/17	1300
NHH-B	29516-013	Hold ^a	Solid	08/11/17	1157	08/18/17	1300
NHH-W	29516-014	Site	Solid	08/09/17	1634	08/18/17	1300
NHH-W	29516-015	Site	Solid	08/15/17	0938	08/18/17	1300
NHH-O	29516-016	Site	Solid	08/14/17	1614	08/18/17	1300
NHH-O	29516-017	Site	Solid	08/08/17	1445	08/18/17	1300
NHH-Y	29516-018	Site	Solid	08/13/17	0820	08/18/17	1300
NHH-Y	29516-019	Site	Solid	08/08/17	1153	08/18/17	1300
NHH-G	29516-020	Site	Solid	08/17/17	0934	08/18/17	1300
NHH-G	29516-021	Site	Solid	08/11/17	0837	08/18/17	1300
NHH-K	29516-022	Site	Solid	08/10/17	1409	08/18/17	1300
NHH-K	29516-023	Site	Solid	08/14/17	1232	08/18/17	1300
NHH-N	29516-024	Site	Solid	08/13/17	1515	08/18/17	1300
NHH-N	29516-025	Site	Solid	08/08/17	1305	08/18/17	1300
NHH-A	29516-026	Hold ^a	Solid	08/11/17	1340	08/18/17	1300
NHH-C	29516-027	Site	Solid	08/17/17	1213	08/18/17	1300
NHH-C	29516-028	Site	Solid	08/11/17	1033	08/18/17	1300
NHH-D	29516-029	Site	Solid	08/16/17	1443	08/18/17	1300
NHH-D	29516-030	Site	Solid	08/11/17	1507	08/18/17	1300
NHH-T	29516-031	Site	Solid	08/12/17	1220	08/18/17	1300
NHH-T	29516-032	Site	Solid	08/08/17	1734	08/18/17	1300
NHH-E	29516-033	Site	Solid	08/14/17	0832	08/18/17	1300
NHH-E	29516-034	Site	Solid	08/16/17	1230	08/18/17	1300
NHH-S	29516-035	Site	Solid	08/15/17	1158	08/18/17	1300
NHH-S	29516-036	Site	Solid	08/10/17	0955	08/18/17	1300
NHH-R	29516-037	Site	Solid	08/16/17	0829	08/18/17	1300
NHH-R	29516-038	Site	Solid	08/10/17	0832	08/18/17	1300
NHH-H	29516-039	Site	Solid	08/10/17	1548	08/18/17	1300
NHH-H	29516-040	Site	Solid	08/16/17	1027	08/18/17	1300
NHH-I	29516-041	Site	Solid	08/10/17	1746	08/18/17	1300

Field ID	ESI Code	Sample Type	Matrix	Collection		Receipt	
				Date	Time	Date	Time
NHH-I	29516-042	Site	Solid	08/17/17	1627	08/18/17	1300
NHH-V	29516-043	Site	Solid	08/09/17	1745	08/18/17	1300
NHH-V	29516-044	Site	Solid	08/15/17	1646	08/18/17	1300
NHH-X	29516-045	Site	Solid	08/08/17	0922	08/18/17	1300
NHH-X	29516-046	Site	Solid	08/12/17	1600	08/18/17	1300
CLDS-Ref	29516-047	Reference	Solid	08/17/17	0800	08/18/17	1300
NHC-I	29516-048	Site	Water	08/17/17	1430	08/18/17	1300
NHC-V	29516-049	Site	Water	08/17/17	1528	08/18/17	1300
NHC-F	29516-050	Site	Water	08/17/17	1300	08/18/17	1300
CLDS-Ref-Top	29516-051	Reference	Water	08/17/17	1015	08/18/17	1300
CLDS-Ref-Mid	29516-052	Reference	Water	08/17/17	1015	08/18/17	1300
CLDS-Ref-Bottom	29516-053	Reference	Water	08/17/17	1015	08/18/17	1300
NHH-Q	29516-054	Site	Solid	08/09/17	1427	08/18/17	1300
NHH-U	29516-055	Site	Solid	08/09/17	0905	08/18/17	1300

Note:

^a Samples NHH-A and NHH-B were delivered to ESI but were not included in the compositing scheme per verbal communication from the client.

Table 2. Summary of Sample Compositing Schedule. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Composite ID	ESI Code	Components		Final Amount	Composite Date	
		Field ID	ESI Code		Date	Time
CLDS Reference Site ^a	29517-009	CLDS-Ref	29516-047	20 gal	08/21/17	1630
Composite 1	29517-001	NHH-C	29516-027	22 gal	08/21/17	0840
		NHH-C	29516-028			
Composite 2	29517-002	NHH-D	29516-029	26 gal	08/21/17	0950
		NHH-D	29516-030			
		NHH-E	29516-033			
		NHH-E	29516-034			
		NHH-F	29516-009			
		NHH-F	29516-010			
Composite 3	29517-003	NHH-G	29516-020	31 gal	08/21/17	1400
		NHH-G	29516-021			
		NHH-H	29516-039			
		NHH-H	29516-040			
		NHH-I	29516-041			
		NHH-I	29516-042			
Composite 4	29517-004	NHH-J	29516-007	23 gal	08/21/17	1445
		NHH-J	29516-008			
		NHH-K	29516-022			
		NHH-K	29516-023			
		NHH-L	29516-005			
		NHH-L	29516-006			

Composite ID	ESI Code	Components		Final Amount	Composite Date	
		Field ID	ESI Code		Date	Time
Composite 5	29517-005	NHH-M	29516-011	29 gal	08/21/17	1530
		NHH-M	29516-012			
		NHH-N	29516-024			
		NHH-N	29516-025			
		NHH-O	29516-016			
		NHH-O	29516-017			
Composite 6	29517-006	NHH-P	29516-003	28 gal	08/21/17	1205
		NHH-P	29516-004			
		NHH-Q	29516-054			
		NHH-R	29516-037			
		NHH-R	29516-038			
		NHH-S	29516-035			
Composite 7	29517-007	NHH-S	29516-036	31 gal	08/21/17	1540
		NHH-T	29516-031			
		NHH-T	29516-032			
		NHH-U	29516-055			
		NHH-V	29516-043			
		NHH-V	29516-044			
Composite 8	29517-008	NHH-W	29516-014	26 gal	08/21/17	1130
		NHH-W	29516-015			
		NHH-X	29516-045			
		NHH-X	29516-046			
		NHH-Y	29516-018			
		NHH-Y	29516-019			
		NHH-Z	29516-001			
		NHH-Z	29516-002			

Notes:

^a This sample was homogenized only.

Table 3. Summary of Reference Toxicant Data. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Date	Endpoint		Value	Historic Mean	Acceptable Range	Reference Toxicant
<i>Macoma nasuta</i>						
08/29/17	Survival	LC-50	9.2	9.0	1.1 - 16.8	Copper (mg/L)
<i>Nereis virens</i>						
08/31/17	Survival	LC-50	3.2	3.6	1.3 - 5.8	Copper (mg/L)

Note: Means and Acceptable Ranges based on the past 20 reference toxicant assays.
Acceptable range is defined as ± 2 standard deviations of historic mean.

Table 4. Summary of Laboratory Control Performance and Assay Acceptability Criteria. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Endpoint / Measurement		Protocol Criteria	Unit	<i>M. nasuta</i>	<i>N. virens</i>
Mean Survival		laboratory Control ≥ 90%	%	97%	92%
			Protocol Met	Yes	Yes
Tissue Mass		Sufficient for analysis	Protocol Met	Yes	Yes
Salinity	Minimum:	28‰	ppt	28.1	28.4
			Protocol Met	Yes	Yes
	Maximum:	32‰	ppt	30.4	30.3
			Protocol Met	Yes	Yes
Temperature		Mean: 12-16°C	Daily / Hourly	12.5 / 12.7	12.4 / 12.7 ^a
		Minimum: 9°C	Daily / Hourly	11.9 / 12.2	11.8 / 12.2 ^a
		Maximum: 15°C	Daily / Hourly	12.8 / 14.1	12.6 / 14.1 ^a
			Protocol Met	Yes / Yes	Yes / Yes

Notes:

^a The *M. nasuta* and *N. virens* assays did not run concurrently, the *M. nasuta* assay started and ended 2 days earlier than the *N. virens* assay. However, the shared hourly temperature logger was removed from the temperature-controlled room at the end of the *M. nasuta* assay, two days before the end of the *N. virens* assay, therefore these measurements were not collected. The values reported for *N. virens* are the same as for *M. nasuta*. See Section 3.3 for a discussion of the protocol deviation.

Table 5. *Macoma nasuta* Day 28 Survival Data. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Day 28 Proportion Survived Summary - Mean *Macoma nasuta* Survival

Sample ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	29524-000	5	97%	97%	100%	2%
CLDS Reference	29517-009	5	99%	97%	100%	2%
Composite 1	29517-001	5	97%	93%	100%	3%
Composite 2	29517-002	5	98%	97%	100%	2%
Composite 3	29517-003	5	98%	97%	100%	2%
Composite 4	29517-004	5	99%	93%	100%	3%
Composite 5	29517-005	5	98%	93%	100%	3%
Composite 6	29517-006	5	99%	93%	100%	3%
Composite 7	59517-007	5	99%	97%	100%	2%
Composite 8	29517-008	5	96%	93%	100%	3%

Day 28 Survival Statistical Analysis			Statistically Significant Difference, "<" as Compared to:	Difference in Survival as Compared to: CLDS Reference >10% (% Difference)	
Sample ID	ESI Code	Mean	CLDS Reference		
CLDS Reference	29517-009	99%	-	-	-
Composite 1	29517-001	97%	No	No	2%
Composite 2	29517-002	98%	No	No	1%
Composite 3	29517-003	98%	No	No	1%
Composite 4	29517-004	99%	No/No	No	0%
Composite 5	29517-005	98%	No	No	1%
Composite 6	29517-006	99%	No/No	No	0%
Composite 7	59517-007	99%	No	No	0%
Composite 8	29517-008	96%	Yes	No	3%

Table 6. *Nereis virens* Day 28 Survival Data. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Day 28 Proportion Survived Summary - Mean *Nereis virens* Survival

Sample ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	29525-000	5	92%	85%	95%	5%
CLDS Reference	29517-009	5	97%	95%	100%	3%
Composite 1	29517-001	5	96%	85%	100%	7%
Composite 2	29517-002	5	98%	95%	100%	3%
Composite 3	29517-003	5	98%	95%	100%	3%
Composite 4	29517-004	5	95%	85%	100%	6%
Composite 5	29517-005	5	96%	90%	100%	4%
Composite 6	29517-006	5	93%	90%	95%	3%
Composite 7	59517-007	5	97%	95%	100%	3%
Composite 8	29517-008	5	97%	95%	100%	3%

Day 28 Survival Statistical Analysis			Statistically Significant Difference, "<" as Compared to:	Difference in Survival as Compared to: CLDS Reference >10% (% Difference)	
Sample ID	ESI Code	Mean	CLDS Reference		
CLDS Reference	29517-009	97%	-	-	-
Composite 1	29517-001	96%	No	No	1%
Composite 2	29517-002	98%	No	No	-1%
Composite 3	29517-003	98%	No	No	-1%
Composite 4	29517-004	95%	No	No	2%
Composite 5	29517-005	96%	No	No	1%
Composite 6	29517-006	93%	Yes	No	4%
Composite 7	59517-007	97%	No	No	0%
Composite 8	29517-008	97%	No	No	0%

Table 7. Statistical Comparisons of *Macoma nasuta* Body Burdens vs. CLDS Reference Site. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Compound	Units	CLDS		Comp 1		Comp 2		Comp 3		Comp 4		Comp 5		Comp 6		Comp 7		Comp 8	
		Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual
Trace Metals																			
Arsenic, total	mg/Kg	3.20		2.43	NS	2.07	NS	2.15	NS	2.40	NS	2.18	NS	1.65	NS	2.30	NS	2.33	NS
Cadmium, total	mg/Kg	0.028	b	0.020	bNS	0.023	bNS	0.025	bNS	0.045	bS	0.037	bNS	0.063	S	0.045	bS	0.042	bNS
Chromium, total	mg/Kg	0.245	b	0.146	bNS	0.228	bNS	0.227	bNS	0.416	bNS	0.263	bNS	0.715	S	0.494	bS	0.534	bS
Copper, total	mg/Kg	1.87		1.28	NS	1.66	NS	1.48	NS	2.46	NS	3.87	NS	2.99	S	2.62	NS	2.54	S
Lead, total	mg/Kg	0.348		0.192	NS	0.300	NS	0.285	NS	0.589	S	0.389	NS	0.824	S	0.701	S	0.683	S
Mercury, total	mg/Kg	0.004	ab	0.004	aNS	0.004	abNS	0.004	abNS	0.005	abNS	0.004	aNS	0.004	aNS	0.004	abNS	0.004	abNS
Nickel, total	mg/Kg	0.387		0.227	NS	0.278	NS	0.256	NS	0.352	NS	0.333	NS	0.408	NS	0.365	NS	0.392	NS
Zinc, total	mg/Kg	11.19		8.39	NS	7.43	NS	8.22	NS	12.23	NS	10.97	NS	12.74	NS	10.59	NS	11.17	NS
PAH Compounds																			
Acenaphthene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.50	abc	9.56	abc	8.97	ac
Acenaphthylene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.09	ac	8.92	ac	8.97	ac
Anthracene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.09	ac	8.92	ac	8.97	ac
Benzo(a)anthracene	µg/Kg	11.22	a	8.99	aNS	13.26	abNS	11.24	abNS	36.28	S	24.90	S	39.80	S	36.30	S	38.66	S
Benzo(a)pyrene	µg/Kg	9.15	a	8.99	ac	9.28	abc	9.26	ac	16.16	abc	8.91	abc	14.94	bc	12.07	abc	11.22	bc
Benzo(b)fluoranthene	µg/Kg	9.76	ab	8.99	aNS	10.43	abNS	9.26	aNS	24.82	bS	15.00	bS	25.66	S	23.38	bS	21.76	bS
Benzo(k)fluoranthene	µg/Kg	9.15	a	8.99	ac	9.19	abc	9.26	ac	14.82	bc	8.83	abc	12.03	bc	10.34	abc	10.95	bc
Benzo(g,h,i)perylene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	9.50	abc	8.50	ac	9.54	abc	8.99	abc	8.97	ac
Chrysene	µg/Kg	9.15	a	8.99	ac	10.80	abc	9.26	ac	28.90	bc	18.00	bc	34.24	c	28.64	c	28.36	c
Dibenz(a,h)anthracene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.09	ac	8.92	ac	8.97	ac
Fluoranthene	µg/Kg	10.14	ab	8.99	aNS	23.50	bNS/S	11.76	abNS	56.32	S	41.64	S	76.46	S	69.36	S	92.30	S
Fluorene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.09	ac	8.92	ac	8.97	ac
Indeno(1,2,3-c,d)pyrene	µg/Kg	9.15	a	8.99	ac	18.28	bc	15.50	abc	21.88	c	18.90	c	10.38	abc	10.90	ac	15.24	ac
Naphthalene	µg/Kg	9.15	a	8.99	ac	9.11	ac	9.26	ac	8.99	ac	8.50	ac	9.09	ac	8.92	ac	8.97	ac
Phenanthrene	µg/Kg	9.30	ab	8.99	aNS	9.97	abNS	9.26	aNS	9.99	abNS	10.15	abNS	20.06	bS	16.32	bS	22.18	S
Pyrene	µg/Kg	10.34	ab	8.99	aNS	23.76	S	11.24	abNS	63.24	S	37.50	S	65.00	S	57.94	S	74.00	S
Total PAHs	µg/Kg	151.4		143.8		192.2		160.9		335.9		243.3		363.1		328.4		377.5	

Compound	Units	CLDS		Comp 1		Comp 2		Comp 3		Comp 4		Comp 5		Comp 6		Comp 7		Comp 8	
		Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual
PCB Congeners																			
PCB 008	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	1.26	ac	0.90	ac
PCB 018	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 028	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 044	µg/Kg	0.92	a	0.90	ac	1.26	ac	2.16	c	2.41	ac	2.67	c	2.39	c	2.19	bc	2.02	abc
PCB 052	µg/Kg	0.92	a	0.90	ac	0.98	abc	0.93	ac	0.91	abc	1.23	bc	2.69	c	2.95	c	2.61	c
PCB 066	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	abc	0.91	abc	1.44	bc	1.27	bc	0.94	abc
PCB 101	µg/Kg	0.92	a	0.90	ac	1.84	abc	1.94	bc	2.68	c	2.75	c	3.22	c	2.30	bc	2.04	ac
PCB 105	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	1.22	abc	0.89	ac	0.90	ac
PCB 118	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.95	abc	0.85	ac	1.26	bc	0.97	abc	0.90	ac
PCB 128	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 138	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	1.03	abc	1.05	abc	1.76	bc	1.24	bc	1.17	abc
PCB 153	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	1.04	abc	1.05	abc	1.42	bc	1.21	abc	1.06	abc
PCB 170	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 180	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 187	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 195	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 206	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
PCB 209	µg/Kg	0.92	a	0.90	ac	0.91	ac	0.93	ac	0.90	ac	0.85	ac	0.91	ac	0.89	ac	0.90	ac
Total PCBs	µg/Kg	33.1		32.4		35.5		38.0		39.6		39.7		49.0		44.6		41.3	
Pesticides																			
Aldrin	µg/Kg	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
cis-Chlordane	µg/Kg	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.609	ac	0.624	ac	0.475	ac
trans-Chlordane	µg/Kg	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
cis-Nonachlor	µg/Kg	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
trans-Nonachlor	µg/Kg	0.458	a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.535	ac	0.750	ac	1.082	ac
Oxychlordane	µg/Kg	0.915	a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.850	ac	0.909	ac	0.892	ac	0.897	ac
Total Chlordanes	µg/Kg	2.75		2.70		2.73		2.78		2.70		2.55		2.96		3.16		3.35	
4,4'-DDT	µg/Kg	0.458	a	0.449	ac	0.632	ac	0.463	ac	0.449	ac	0.425	ac	0.876	c	0.911	c	0.903	ac
4,4'-DDD	µg/Kg	0.458	a	0.449	ac	0.758	ac	0.463	ac	0.449	ac	0.425	ac	0.485	ac	0.459	ac	1.204	ac
4,4'-DDE	µg/Kg	0.466	a	0.449	aNS	0.864	aNS	0.519	aNS	0.538	aNS	0.782	S	1.546	S	1.294	S	1.033	S
Total DDT	µg/Kg	1.38		1.35		2.25		1.45		1.44		1.63		2.91		2.66		3.14	

Compound	Units	CLDS	Comp 1		Comp 2		Comp 3		Comp 4		Comp 5		Comp 6		Comp 7		Comp 8	
		Mean Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual
Dieldrin	µg/Kg	0.458 a	0.449	ac	0.618	ac	0.463	ac	0.449	ac	0.425	ac	0.714	c	0.629	ac	0.503	c
alpha-Endosulfan	µg/Kg	0.458 a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
beta-Endosulfan	µg/Kg	0.458 a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.843	ac	1.280	ac	0.639	ac
Total Endosulfans	µg/Kg	0.916	0.898		0.910		0.926		0.898		0.850		1.30		1.73		1.09	
Endrin	µg/Kg	2.163	1.963	NS	1.069	NS	5.331	aNS	2.816	aNS	0.708	NS	0.958	NS	3.602	NS	5.722	NS
Heptachlor	µg/Kg	0.458 a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
Heptachlor epoxide	µg/Kg	0.915 a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.850	ac	0.909	ac	0.892	ac	0.897	ac
Hexachlorobenzene	µg/Kg	0.915 a	0.899	ac	0.911	ac	0.926	ac	0.899	ac	0.850	ac	0.909	ac	0.892	ac	0.897	ac
Lindane	µg/Kg	0.458 a	0.449	ac	0.455	ac	0.463	ac	0.449	ac	0.425	ac	0.454	ac	0.446	ac	0.449	ac
Methoxychlor	µg/Kg	4.576 a	4.494	ac	4.552	ac	4.628	ac	4.494	ac	4.252	ac	4.544	ac	4.460	ac	4.488	ac
Toxaphene	µg/Kg	22.96 a	22.54	ac	22.84		23.22	ac	22.54	ac	21.36	ac	22.80	ac	22.40	ac	22.52	ac

Notes:

a = Analyte not detected (below MDL) in at least one replicate; mean value was calculated using the project specific MDL for non-detected values.

b = Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.

c = Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS = Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at $\alpha=0.05$.

S = Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at $\alpha=0.05$

NS/S indicates that a statistical outlier was detected and the findings of significance were different with and without the statistical outlier included in the analysis.

Table 8. Statistical Comparisons of *Nereis virens* Body Burdens vs. CLDS Reference Site. Sediment Bioaccumulation Evaluation. New Haven Harbor FNP. New Haven, Connecticut. August 2017.

Compound	Units	CLDS		Comp 1		Comp 2		Comp 3		Comp 4		Comp 5		Comp 6		Comp 7		Comp 8	
		Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual
Trace Metals																			
Arsenic, total	mg/Kg	2.06		2.17	NS	2.30	NS	2.14	NS	2.07	NS	2.23	NS	2.04	NS	2.14	NS	2.32	NS
Cadmium, total	mg/Kg	0.034	b	0.039	bNS	0.044	bNS	0.035	bNS	0.040	bNS	0.038	bNS	0.036	bNS	0.038	bNS	0.041	bNS
Chromium, total	mg/Kg	0.057	b	0.055	bNS	0.046	abNS	0.047	abNS	0.047	abNS	0.041	abNS	0.080	bNS	0.042	abNS	0.039	abNS
Copper, total	mg/Kg	1.02		0.85	NS	1.09	NS	0.96	NS	1.24	S	0.89	NS	1.05	NS	0.94	NS	0.82	NS
Lead, total	mg/Kg	0.127		0.098	NS	0.138	NS	0.102	NS	0.124	NS	0.138	NS	0.095	NS	0.116	NS	0.141	NS
Mercury, total	mg/Kg	0.010	b	0.011	bNS	0.008	bNS	0.011	bNS	0.012	bNS	0.007	bNS	0.011	bNS	0.012	bNS	0.007	bNS
Nickel, total	mg/Kg	0.111	b	0.085	bNS	0.081	bNS	0.093	bNS	0.081	bNS	0.072	bNS	0.115	bNS	0.105	bNS	0.106	bNS
Zinc, total	mg/Kg	6.06		6.43	NS	6.68	S	6.64	S	6.72	S	6.25	NS	6.76	S	9.05	S	6.53	NS
PAH Compounds																			
Acenaphthene	µg/Kg	7.26	ab	7.89	abNS	9.16	aNS/S	9.39	aNS/S	9.08	aNS/S	9.29	aNS/S	9.96	abNS/S	11.06	abNS/S	13.32	bS
Acenaphthylene	µg/Kg	11.94	a	4.84	abNS	9.16	aNS/S	9.39	aNS/S	9.08	aNS/S	9.29	aNS/S	9.47	aNS/S	9.20	aNS/S	8.93	aNS/S
Anthracene	µg/Kg	4.58	a	4.77	abc	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Benzo(a)anthracene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Benzo(a)pyrene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Benzo(b)fluoranthene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Benzo(k)fluoranthene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Benzo(g,h,i)perylene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Chrysene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Dibenz(a,h)anthracene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Fluoranthene	µg/Kg	4.58	a	4.89	abc	9.49	abc	9.39	ac	13.00	abc	10.74	abc	16.96	bc	21.68	bc	33.50	c
Fluorene	µg/Kg	4.58	a	7.06	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Indeno(1,2,3-c,d)pyrene	µg/Kg	4.58	a	4.73	ac	9.16	ac	9.39	ac	9.08	ac	9.29	ac	9.47	ac	9.20	ac	8.93	ac
Naphthalene	µg/Kg	4.73	ab	5.06	abNS	9.16	aS	9.39	aS	9.08	aS	9.29	aS	9.47	aS	9.20	aS	8.93	aS
Phenanthrene	µg/Kg	5.89	ab	10.50	abNS	9.16	aS	9.39	aS	9.08	aS	9.29	aS	9.47	aS	9.20	aS	8.93	aS
Pyrene	µg/Kg	4.58	a	4.73	ac	9.28	abc	9.39	ac	14.18	abc	10.23	abc	13.09	abc	15.62	bc	24.22	bc
Total PAHs	µg/Kg	84.8		87.6		147.0		150.2		154.3		151.0		163.1		168.0		187.1	

Compound	Units	CLDS		Comp 1		Comp 2		Comp 3		Comp 4		Comp 5		Comp 6		Comp 7		Comp 8	
		Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual	Mean	Qual
PCB Congeners																			
PCB 008	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 018	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 028	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 044	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 052	µg/Kg	0.46	a	0.47 ac		0.92 abc		0.94 ac		0.91 ac		0.93 ac		2.05 bc		2.18 ac		1.58 ac	
PCB 066	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 101	µg/Kg	0.46	a	0.54 abc		0.95 abc		0.94 abc		0.91 ac		0.93 ac		1.31 abc		0.92 ac		0.89 ac	
PCB 105	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 118	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 128	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 138	µg/Kg	0.61	ab	0.76 bNS		0.92 aS		0.95 abS		0.99 abS		0.93 abS		1.38 abS		1.43 bS		1.36 abS	
PCB 153	µg/Kg	0.87	b	1.16 bNS		0.97 abNS		1.09 abNS		1.18 abNS		1.18 abNS		2.07 bS		2.19 S		1.73 bS	
PCB 170	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 180	µg/Kg	0.46	a	0.56 abc		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 187	µg/Kg	0.46	a	0.53 abc		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 195	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 206	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
PCB 209	µg/Kg	0.46	a	0.47 ac		0.92 ac		0.94 ac		0.91 ac		0.93 ac		0.95 ac		0.92 ac		0.89 ac	
Total PCBs	µg/Kg	17.7		19.3		33.3		34.2		33.5		34.0		40.2		39.2		36.0	
Pesticides																			
Aldrin	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
cis-Chlordane	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
trans-Chlordane	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
cis-Nonachlor	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
trans-Nonachlor	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
Oxychlordane	µg/Kg	0.917 a		0.947 ac		0.916 ac		0.939 ac		0.908 ac		0.929 ac		0.947 ac		0.920 ac		0.893 ac	
Total Chlordanes	µg/Kg	2.75		2.84		2.75		2.82		2.72		2.79		2.84		2.76		2.68	
4,4'-DDT	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
4,4'-DDD	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
4,4'-DDE	µg/Kg	0.458 a		0.473 ac		0.458 ac		0.469 ac		0.454 ac		0.464 ac		0.474 ac		0.460 ac		0.447 ac	
Total DDT	µg/Kg	1.37		1.42		1.37		1.41		1.36		1.39		1.42		1.38		1.34	

Compound	Units	CLDS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Comp 7	Comp 8
		Mean Qual	Mean Qual	Mean Qual	Mean Qual	Mean Qual	Mean Qual	Mean Qual	Mean Qual	Mean Qual
Dieldrin	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
alpha-Endosulfan	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
beta-Endosulfan	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
Total Endosulfans	µg/Kg	0.916	0.946	0.916	0.938	0.908	0.928	0.948	0.920	0.894
Endrin	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
Heptachlor	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
Heptachlor epoxide	µg/Kg	0.917 a	0.947 ac	0.916 ac	0.939 ac	0.908 ac	0.929 ac	0.947 ac	0.920 ac	0.893 ac
Hexachlorobenzene	µg/Kg	0.917 a	0.947 ac	0.916 ac	0.939 ac	0.908 ac	0.929 ac	0.947 ac	0.920 ac	0.893 ac
Lindane	µg/Kg	0.458 a	0.473 ac	0.458 ac	0.469 ac	0.454 ac	0.464 ac	0.474 ac	0.460 ac	0.447 ac
Methoxychlor	µg/Kg	4.584 a	4.730 ac	4.580 ac	4.692 ac	4.538 ac	4.644 ac	4.738 ac	4.604 ac	4.468 ac
Toxaphene	µg/Kg	23.02 a	23.74 ac	23.00 ac	23.54 ac	22.78 ac	23.30 ac	23.78 ac	23.12 ac	22.42 ac

Notes:

a = Analyte not detected (below MDL) in at least one replicate; mean value was calculated using the project specific MDL for non-detected values.

b = Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.

c = Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS = Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at $\alpha=0.05$.

S = Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at $\alpha=0.05$

NS/S indicates that a statistical outlier was detected and the findings of significance were different with and without the statistical outlier included in the analysis.

APPENDIX A: RAW DATA & STATISTICAL SUPPORT

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STUDY NUMBER RECORD

Issue and complete this form for studies that will require multiple tasks and directly associated support studies. Issue consecutive study numbers at the start of the project to cover all potential elements of the project.

CLIENT: AECOM

CONTACT(S): Ryan McCarthy, Christine Archer, Maura Surprenant

PROJECT: New Haven Harbor Federal Navigation Project

CONTRACT #: W912WJ-17-D-0003

Species / Analysis Parameters:		STUDY:
Sample Receipt:		29516
Grain Size Analysis:		-
Composite Prep:		29517
Bulk Sediment Analysis ^a:		29518
10 Day Assay:	<i>Leptocheirus plumulosus</i>	29519
	<i>Americamysis bahia</i>	29520
Elutriate Preparation:	Type:	29521
Elutriate Analysis:	Pentachlorophenol	Yes / No
	Trace Metals	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No
SPP Assays:	<i>Menidia beryllina</i>	
	<i>Americamysis bahia</i>	29523
	<i>Arbacia punctulata</i>	
Bioaccumulation Study:	<i>Macoma nasuta</i>	29524
	<i>Nereis virens</i>	29525
Tissue Analysis ^a:	Trace Metals	Yes / No
	PAH Compounds	Yes / No
	PCB Congeners	Yes / No
	Pesticides	Yes / No

Notes:

^a Bulk sediment and tissue analyses were completed by Alpha Analytical, Mansfield, Massachusetts.

Sample ID	Latitude (NAD 83)	Longitude (NAD 83)	Predicted Water Depth (FT MLLW)	Project Depth (FT MLLW) Including Allowable Over Depth	Est Penetration From Water/ Sediment Interface	Estimated Volume (Gallons) Per Location *	Estimated Number of Cores/Grabs Needed
NHH-A#	41.222715	-72.910995	28.6	36.6	10.0	4.2	3
NHH-B	41.223094	-72.909953	39.5	42.0	4.5	1.9	4
NHH-C	41.223443	-72.909040	33.5	42.0	10.5	4.4	2
NHH-D	41.248083	-72.915987	18.6	33.6	17.0	7.1	1
NHH-E	41.247915	-72.915987	36	42.0	8.0	3.3	2
NHH-F#	41.247866	-72.913942	17.8	26.2	10.4	4.3	3
NHH-G#	41.262183	-72.913826	15.4	27.7	14.3	5.9	2
NHH-H	41.262103	-72.913150	39.9	42.0	7.1	3.0	3
NHH-I	41.262042	-72.911773	22.8	31.0	10.2	4.2	2
NHH-J#	41.278348	-72.913132	25.1	24.5	1.4	0.6	15
NHH-K	41.278367	-72.912477	36.8	42.0	7.2	3.0	3
NHH-L	41.278436	-72.911054	23.8	26.6	4.8	2.0	4
NHH-M#	41.286420	-72.912045	24.7	35.0	12.3	5.1	3
NHH-N	41.286272	-72.910575	37.4	42.0	6.6	2.7	3
NHH-O	41.286130	-72.909167	36.6	26.4	8.2	3.4	2
NHH-P#	41.292373	-72.913125	19.2	42.0	24.8	10.3	2
NHH-Q	41.292245	-72.911934	14.8	42.0	29.2	12.1	1
NHH-R	41.292011	-72.909869	36.5	26.0	8.5	3.5	2
NHH-S#	41.281829	-72.908069	38.3	42.0	5.7	2.4	4
NHH-T#	41.294296	-72.912018	8.0	23.0	17.0	7.1	2
NHH-U	41.294206	-72.911217	15.7	42.0	28.3	11.8	1
NHH-V	41.294024	-72.909459	36.7	42.0	7.3	3.0	2
NHH-W#	41.293841	-72.907753	36.8	42.0	7.2	3.0	3
NHH-X	41.297451	-72.907596	17.8	25.0	9.2	3.8	2
NHH-Y	41.296875	-72.906705	37.3	42.0	6.7	2.8	3
NHH-Z#	41.296409	-72.906006	36.7	42.0	7.3	3.0	4
NHH-	41.149165	-72.8825	80	NA	NA	20.9	4

From AECOM's Sampling and Analysis Plan (August, 2017)

Client/Project Name:
USACE - NHH - FNP

Project Number:

Project Location:
New Haven Harbor

Field Logbook No.:

Analysis Requested

Container Type
P - Plastic
A - Amber Glass
G - Clear Glass
V - VOA Vial
O - Other
E - Encore

Preservation
1 - HCl, 4°
2 - H2SO4, 4°
3 - HNO3, 4°
4 - NaOH, 4°
5 - NaOH/ZnAc, 4°
6 - Na2S2O3, 4°
7 - 4°

Sampler (Print Name)/(Affiliation):
C. Steve Howe AECOM

Chain of Custody Tape Nos.:

Signature:
C. Steve Howe

Send Results/Report to:

TAT:

Matrix Codes:

DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
ST - Storm Water
W - Water

S - Soil
SL - Sludge
SD - Sediment
SO - Solid
A - Air
L - Liquid
P - Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHC-I	8/17/17	1430	X		5 gal	W	4°C	NA	X											7 carboys
NHC-V	8/17/17	1528	X			W			X											12 carboys, 2 DIs
NHC-F	8/17/17	1300	X			W			X											6 carboys
CLOS- Ref - Top	8/17/17	1015	X			W			X											2 carboys
CLOS- Ref - Mid			X			W			X											2 carboys
CLOS- Ref - Bottom			X			W			X											2 carboys
NHH-C	8/11	1033	X		5 gal bucket	SD			X											7 buckets
NHH-D	8/11	1507	X			SD			X									CSH	3	2 buckets
NHH-E	8/11	0832	X			SD			X											4 buckets
NHH-F	8/11	1650	X			SD			X											3 buckets
NHH-G	8/11	0837	X			SD			X											2 buckets
NHH-H	8/10	1548	X			SD			X											4 buckets
NHH-I	8/17	1627	X			SD			X											3 buckets

Relinquished by: (Print Name)/(Affiliation)
C. Steve Howe AECOM

Signature: **C. Steve Howe**

Date: **8/16/17**
Time: **1300**

Received by: (Print Name)/(Affiliation)
James T. Provencher ESI

Signature: **James T. Provencher**

Date: **08/18/17**
Time: **1300**

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Received by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Relinquished by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Received by: (Print Name)/(Affiliation)

Signature:

Date:
Time:

Analytical Laboratory (Destination): **ESI** Notes:
Discrepancies between most sample date & time and what is labeled on sample containers. Total container count not accurate. Conditions unacceptable for sample receipt & processing. - KC 8/18/17 1700

Sample Shipped Via: **AECOM** Temp blank

UPS FedEx Courier **Other** Yes **No**



CHAIN OF CUSTODY RECORD

29516

Page 2 of 3

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven CT		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:		Field Logbook No.:		Dredge Sediment Soil										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:												Lab I.D.		Remarks	
Signature: 		Send Results/Report to:												TAT:			
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered									
14 NHH-J	8/15/17	1405	X	X	5g bucket	SD	4°C	NA	X								3 buckets
15 NHH-K	8/16/17	1409	X	X					X								2 buckets
19 NHH-L	8/15/17	1515	X	X					X								2 buckets
16 NHH-M	8/18/17	1610	X	X					X								3 buckets
17 NHH-N	8/13/17	1515	X	X					X								2 buckets
18 NHH-O	8/18/17	1445	X	X					X								3 buckets
20 NHH-P	8/9/17	1219	X	X					X								3 buckets
21 NHH-Q (E10 8/21 -054)	8/9/17	1427	X	X					X								4 buckets
22 NHH-R	8/10/17	0832	X	X					X								3 buckets
23 NHH-S	8/10/17	0905	X	X					X								2 buckets
24 NHH-T 1734 CSH	8/8/17	1707 CSH	X	X					X								4 buckets
25 NHH-U (E10 8/21 -055)	8/9/17	0905	X	X					X								5 buckets
26 NHH-V	8/15/17	1646	X	X					X								3 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher		Date: 08/18/17		Analytical Laboratory (Destination): E10 8/21 Notes: See page 1 of 3 (E10 8/21) Samples NHH-Q & NHH-U are accurate based on sample container and were not denoted on revised CoC's.									
Signature:		Time: 1300		Signature:		Time: 1300		Sample Shipped Via: AECOM Temp blank									
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:											
Signature:		Time:		Signature:		Time:		UPS FedEx Courier (Other) Yes (No)									
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:											
Signature:		Time:		Signature:		Time:											



CHAIN OF CUSTODY RECORD


29516

Page 3 of 3

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven, CT			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°	
Project Number:			Field Logbook No.:			<div style="writing-mode: vertical-rl; transform: rotate(180deg);">Dredge Sed Eval</div>										Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product	
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:													Lab I.D.		Remarks	
Signature: 			Send Results/Report to:													TAT:			
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											
127 NHH-W •	8/15/17	0938		X	5 gal. bucket	SD	4°C	NA	X								2 buckets		
128 NHH-X •	8/13/17	1545		X	(	(	(	(	X								2 buckets
129 NHH-Y •	8/8/17	1037		X	(	(	(	(	X								3 buckets
130 NHH-Z •	8/8/17	1153		X	(	(	(	(	X								6 buckets
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/15/17		Received by: (Print Name)/(Affiliation) James T. Provencer ESI			Date: 08/18/17		Analytical Laboratory (Destination): ESI Notes: See page 1 of 3									
Signature:			Time: 1300		Signature:			Time: 1300											
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:		Signature:			Time:		Sample Shipped Via: AECOM Temp blank									
Relinquished by: (Print Name)/(Affiliation)			Date:		Received by: (Print Name)/(Affiliation)			Date:											
Signature:			Time:		Signature:			Time:		UPS FedEx Courier (Other) Yes (No)									

SAMPLE RECEIPT AND CONDITION DOCUMENTATION



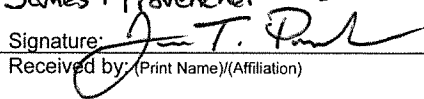
Page 1 of 1


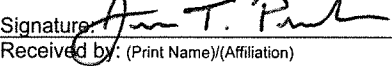
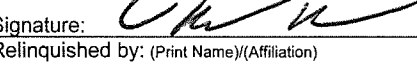
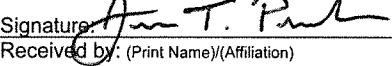
STUDY NO: 29516
 SDG No:
 Project: FNP: New Haven Harbor
 Delivered via: Client
 Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: NA
 Received By: JTP Logged into Lab by: KC 
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: No Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
 Number of COC Pages: 3
 COC Serial Number(s): See CoCs
 COC Complete: Yes Does the info on the COC match the samples? No
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? No
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: No Were samples received intact? (none broken or leaking) No
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
 Were all samples received? Yes Were VOC vials free of headspace? NA
 Client notification/authorization: Not required pH Test strip ID number: _____

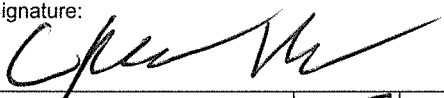
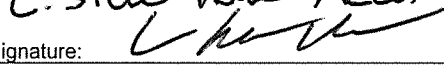
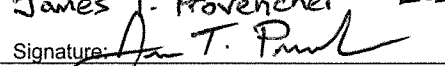
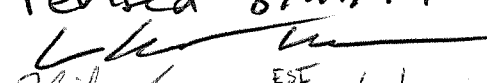
Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
See Chains of Custody						

Notes and qualifications:

-Majority of samples not listed on chains of custody based on container sampling information. Samples rejected and on hold until further notice.
 * Residual samples from grain size analyses received to include in final composites
 -Field ID NHH-Q and NHH-U presented on the associated chains of custody for this sample receipt document (ESI samples -054 and -055) were accurately denoted based on sample containers, and were not present on revised chains of custody issued by AECOM on 08/21/17.

Client/Project Name: USACE-NHH-FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number:		Field Logbook No.:		Dredge Sediment Eval (DSE)										Matrix Codes:		DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water		S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product		
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM		Chain of Custody Tape Nos.:												Lab I.D.		Remarks				
Signature: 		Send Results/Report to:												TAT:						
Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
NHH-Z	8/12	1350	X	X	5g bucket	SD	4°C	NA												2 buckets
NHH-Z	8/8	1153	X	X																4 buckets
NHH-P	8/12	0850	X	X																1 bucket
NHH-P	8/9	1219	X	X																2 buckets
NHH-L	8/15	1405	X	X																1 bucket
NHH-L	8/10	1300	X	X																1 bucket
NHH-J	8/15	1405	X	X																2 buckets
NHH-J	8/10	1141	X	X																1 bucket
NHH-F	8/16	1658	X	X																1 bucket
NHH-F	8/11	1600	X	X																2 buckets
NHH-M	8/13	1220	X	X																2 buckets
NHH-M	8/8	1610	X	X																1 bucket
NHH-RS	8/11	1157	X	X																1 bucket
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination):												
Signature: 		Time: 1300		Signature: 		Time: 1300		COLs amended and revised on 8/21/17												
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		C. Steve Howe AECOM												
Signature:		Time:		Signature:		Time:		Rock - ESI 8/21/17												
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:										Temp blank		
Signature:		Time:		Signature:		Time:		UPS FedEx Courier Other										Yes No		


Client/Project Name: USACE - NHH - FNP			Project Location: New Haven Harbor			Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°									
Project Number:			Field Logbook No.:																								
Sampler (Print Name)/(Affiliation): C. Steve Hane AECOM			Chain of Custody Tape Nos.:																								
Signature: 			Send Results/Report to:													TAT:											
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	<div style="display: flex; justify-content: space-between;"> <div> Matrix Codes: DW - Drinking Water WW - Wastewater GW - Groundwater SW - Surface Water ST - Storm Water W - Water </div> <div> S - Soil SL - Sludge SD - Sediment SO - Solid A - Air L - Liquid P - Product </div> </div>										Lab I.D.	Remarks							
NHH-C	8/17/17	1213		X	S _g bucket	SD	4°C	NA																			5 buckets
NHH-C	8/1/17	1033		X																							2 buckets
NHH-D	8/16	1443		X																							1 bucket
NHH-D	8/11	1507		X																							2 buckets
NHH-T	8/12	1220		X																							1 bucket
NHH-T	8/8	1731		X																							3 buckets
NHH-E	8/14	0832		X																							2 buckets
NHH-E	8/16	1230		X																							2 buckets
NHH-S	8/15	1158		X																							1 bucket
NHH-S	8/10	0955		X																							1 bucket
NHH-R	8/16	0829		X																							1 bucket
NHH-R	8/10	0832		X													2 buckets										
Relinquished by: (Print Name)/(Affiliation) C. Steve Hane AECOM			Date: 8/18/17			Received by: (Print Name)/(Affiliation) James T. Provencher ESI			Date: 8/18/17			Analytical Laboratory (Destination): COCs amended and revised 8/21/17  AECOM 8/21/17															
Signature: 			Time: 1300			Signature: 			Time: 1300																		
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:																		
Signature:			Time:			Signature:			Time:																		
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			Sample Shipped Via: _____ Temp blank _____ UPS FedEx Courier Other Yes No															
Signature:			Time:			Signature:			Time:																		

Client/Project Name: USACE-NHH-FNP			Project Location: New Haven Harbor			Analysis Requested						Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°							
Project Number:			Field Logbook No.:																		
Sampler (Print Name)/(Affiliation): C. Steve Howe AECOM			Chain of Custody Tape Nos.:																		
Signature: 			Send Results/Report to:			TAT:															
Field Sample No./Identification	2017 Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	DSE						Lab I.D.	Remarks					
339 NHH-H	8/10	1548		X	5g bucket	SD	4°C	NA													3 buckets
40 NHH-A	8/16	1027		X																	1 bucket
41 NHH-I	8/10	1746		X																	1 bucket
42 NHH-J	8/17	1627		X																	2 buckets
43 NHH-V	8/9	1745		X																	2 buckets
44 NHH-V	8/15	1646		X																	1 bucket
45 NHH-X	8/8	1153			CSH																2 buckets
46 NHH-X	8/8	0922		X	5g bucket	SD	4°C	NA													2 buckets
47 NHH-X	8/12	1600		X																	2 buckets
48 CLOS-Ref	8/17	0800		X											4 buckets						
Relinquished by: (Print Name)/(Affiliation) C. Steve Howe AECOM			Date: 8/18/17			Received by: (Print Name)/(Affiliation) James T. Provencher ESI			Date: 8/18/17			Analytical Laboratory (Destination): COCs amended and revised 8/21/17									
Signature: 			Time: 1300			Signature: 			Time: 1300			 8/21/17									
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:							Sample Shipped Via:					
Signature:			Time:			Signature:			Time:							Temp blank					
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			Sample Shipped Via:									
Signature:			Time:			Signature:			Time:			Temp blank									
Relinquished by: (Print Name)/(Affiliation)			Date:			Received by: (Print Name)/(Affiliation)			Date:			Sample Shipped Via:									
Signature:			Time:			Signature:			Time:			Temp blank									

Client/Project Name: USACE - NHH - FNP		Project Location: New Haven Harbor		Analysis Requested										Container Type P - Plastic A - Amber Glass G - Clear Glass V - VOA Vial O - Other E - Encore		Preservation 1 - HCl, 4° 2 - H2SO4, 4° 3 - HNO3, 4° 4 - NaOH, 4° 5 - NaOH/ZnAc, 4° 6 - Na2S2O3, 4° 7 - 4°				
Project Number:		Field Logbook No.:																		
Sampler (Print Name)/(Affiliation): C. Steve Hane AECOM		Chain of Custody Tape Nos.:																		
Signature: <i>[Signature]</i>		Send Results/Report to:		TAT:																
Field Sample No./Identification	Date	Time	C O M P	G R A B	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	DSE										Lab I.D.	Remarks
NHC-I	8/17/17	1430	X	X	5g carboys W	40C	NA	X												7 carboys
NHC-V	8/17	1528	X	X				X												12 carboys, 2 DI's*
NHC-F	8/17	1300	X	X				X												6 carboys
CLOS-Ref-Top	8/17	1015	X	X				X												2 carboys
CLOS-Ref-Mid	8/17	1015	X	X				X												2 carboys
CLOS-Ref-Bottom	8/17	1015	X	X				X												2 carboys
<div style="border: 1px solid black; width: 100%; height: 100%; transform: rotate(45deg); position: relative; margin: 0 auto;"> 3/18/17 148 49 50 52 53 154 3 </div>																				
Relinquished by: (Print Name)/(Affiliation) C. Steve Hane AECOM		Date: 8/18/17		Received by: (Print Name)/(Affiliation) James T. Provencher ESI		Date: 8/18/17		Analytical Laboratory (Destination):												
Signature: <i>[Signature]</i>		Time: 1300		Signature: <i>[Signature]</i>		Time: 1300		* water from a leaking carboy was transferred into to lab supplied distilled water containers												
Relinquished by: (Print Name)/(Affiliation) COCs amended and		Date:		Received by: (Print Name)/(Affiliation) C. Steve Hane AECOM		Date:														
Signature: revised 8/21/17		Time:		Signature: <i>[Signature]</i> - ESI 8/21/17		Time:														
Relinquished by: (Print Name)/(Affiliation)		Date:		Received by: (Print Name)/(Affiliation)		Date:		Sample Shipped Via:										Temp blank		
Signature:		Time:		Signature:		Time:		UPS FedEx Courier Other										Yes No		

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC 
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-Z	29516-001	S	Hold:Composite	2x5 Gal.	4C	
NHH-Z	29516-002	S	Hold:Composite	4x5 Gal.	4C	
NHH-P	29516-003	S	Hold:Composite	1x5 Gal.	4C	
NHH-P	29516-004	S	Hold:Composite	2x5 Gal.	4C	
NHH-L	29516-005	S	Hold:Composite	1x5 Gal.	4C	
NHH-L	29516-006	S	Hold:Composite	1x5 Gal.	4C	
NHH-J	29516-007	S	Hold:Composite	2x5 Gal.	4C	
NHH-J	29516-008	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-009	S	Hold:Composite	1x5 Gal.	4C	
NHH-F	29516-010	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-011	S	Hold:Composite	2x5 Gal.	4C	
NHH-M	29516-012	S	Hold:Composite	1x5 Gal.	4C	
NHH-B	29516-013	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-014	S	Hold:Composite	1x5 Gal.	4C	
NHH-W	29516-015	S	Hold:Composite	1x5 Gal.	4C	
NHH-O	29516-016	S	Hold:Composite	2x5 Gal.	4C	
NHH-O	29516-017	S	Hold:Composite	1x5 Gal.	4C	
NHH-Y	29516-018	S	Hold:Composite	2x5 Gal.	4C	
NHH-Y	29516-019	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-020	S	Hold:Composite	1x5 Gal.	4C	
NHH-G	29516-021	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-022	S	Hold:Composite	1x5 Gal.	4C	
NHH-K	29516-023	S	Hold:Composite	1x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *u*
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival: NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
NHH-N	29516-024	S	Hold:Composite	1x5 Gal.	4C	
NHH-N	29516-025	S	Hold:Composite	1x5 Gal.	4C	
NHH-A	29516-026	S	Hold:Composite	1x5 Gal.	4C	
NHH-C	29516-027	S	Hold:Composite	5x5 Gal.	4C	
NHH-C	29516-028	S	Hold:Composite	2x5 Gal.	4C	
NHH-D	29516-029	S	Hold:Composite	1x5 Gal.	4C	
NHH-D	29516-030	S	Hold:Composite	2x5 Gal.	4C	
NHH-T	29516-031	S	Hold:Composite	1x5 Gal.	4C	
NHH-T	29516-032	S	Hold:Composite	3x5 Gal.	4C	
NHH-E	29516-033	S	Hold:Composite	2x5 Gal.	4C	
NHH-E	29516-034	S	Hold:Composite	2x5 Gal.	4C	
NHH-S	29516-035	S	Hold:Composite	1x5 Gal.	4C	
NHH-S	29516-036	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-037	S	Hold:Composite	1x5 Gal.	4C	
NHH-R	29516-038	S	Hold:Composite	2x5 Gal.	4C	
NHH-H	29516-039	S	Hold:Composite	3x5 Gal.	4C	
NHH-H	29516-040	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-041	S	Hold:Composite	1x5 Gal.	4C	
NHH-I	29516-042	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-043	S	Hold:Composite	2x5 Gal.	4C	
NHH-V	29516-044	S	Hold:Composite	1x5 Gal.	4C	
NHH-X	29516-045	S	Hold:Composite	2x5 Gal.	4C	
NHH-X	29516-046	S	Hold:Composite	2x5 Gal.	4C	

Notes and qualifications: 29516-024 S Hold:Composite

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 3 of 3

STUDY NO: 29516
SDG No:
Project: FNP: New Haven Harbor
Delivered via: Client
Date and Time Received: 08/18/17 1300 Date and Time Logged into Lab: 08/21/17 1600
Received By: JTP Logged into Lab by: KC *kc*

Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: No Custody Seals present? NA
Cooler Blank Temp (C) at arrival NA Custody Seals intact? NA
Number of COC Pages: 5
COC Serial Number(s): See CoCs
COC Complete: Yes * Does the info on the COC match the samples? Yes *
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes *
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes *
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis Yes *
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required pH Test strip ID number: _____

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
CLDS-Ref	29516-047 S		Hold:Composite	4x5 Gal.	4C	
NHC-I	29516-048 W		Hold:Composite	7x5 Gal.	4C	
NHC-V	29516-049 W		Hold:Composite	12x5 Gal.	4C	
NHC-F	29516-050 W		Hold:Composite	6x5 Gal.	4C	
CLDS-Ref-Top	29516-051 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Mid	29516-052 W		Hold:Composite	2x5 Gal.	4C	
CLDS-Ref-Bottom	29516-053 W		Hold:Composite	2x5 Gal.	4C	
NHH-Q **	29516-054 S		Hold:Composite	4x5 Gal.	4C	
NHH-U **	29516-055 S		Hold:Composite	5x5 Gal.	4C	

Notes and qualifications:

- See COC

* On day samples were dropped off, chains of custody provided did not correspond to sampling information on individual sample containers. As a result, samples were rejected and stored at 4 C. AECOM staff were present at ESI on 08/21/17 and revised chains of custody to encompass all samples received. Samples were subsequently accepted and processed. One container of -049 was leaking and was exchanged into viable containers upon receipt. Compositing information was relayed by AECOM staff, as no formal compositing scheme was provided to ESI. Residual sample from grain size analyses were utilized in sample compositing, as per AECOM.

** Samples denoted on original chain of custody, not on revised documents discussed above.

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 1
 Composite Lab ID.: 29517-001 Composite Final Volume: 22 gallons
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 0840
 Initials: BG/JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-C	29516-027	Solid	—	≈ 2.5 gal/bag	≈ 24.5 gal/bag	gray to black sediment with lots of shell hash
↓	↓ -028	↓	↓	↓	↓	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 2
 Composite Lab ID.: 29517-002 Composite Final Volume: ≈ 28^{gallons} ^{ESD 08/11}
 Composite Matrix: Solid Composite Container(s): 5x5 gallon buckets
 Composite Prepared Date: 08/11/17 1x1 gallon bucket
 Composite Prepared Time: 0950
 Initials: RF JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-D	29516-029 030	Solid	—	—	≈ 10 gallons	
NHH-E	↓ - 033 034	Solid	—	≈ 7 ^{gallons} ^{ESD 08/11}	≈ 7 gallons	
NHH-F	↓ - 009 010	Solid	—	—	≈ 10 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 3
 Composite Lab ID.: 29517-003 Composite Final Volume: 31 gal
 Composite Matrix: Solid Composite Container(s): 6x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon buckets
 Composite Prepared Time: 1400
 Initials: W/ JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-G	29516-020 -021	Solid	—	—	~9 gallons	
NHH-H	↓ -039 -040	Solid	—	—	~9 gallons	
NHH-I	✓ -041 -042	Solid	—	—	~1 gallon	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 4
 Composite Lab ID.: 29517-004 Composite Final Volume: 23 gallons
 Composite Matrix: Solid Composite Container(s): 505 gallon bucket
 Composite Prepared Date: 08/21/17 10 gallon bucket
 Composite Prepared Time: 1445
 Initials: BO/STP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-J	29516- ⁰⁰⁷ ₀₀₈	Solid	—	—	~8 gallons	
NHH-K	↓ - ⁰²² ₀₂₃	Solid	—	—	~8 gallons	
NHH-L	↓ - ⁰⁰⁵ ₀₀₆	Solid	—	—	~9.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 5
 Composite Lab ID.: 29517-005 Composite Final Volume: ≈ 29 gallons
 Composite Matrix: Solid Composite Container(s): 6 x 5 gallon
 Composite Prepared Date: 08/21/17 1 x 1 gallon
 Composite Prepared Time: 1530
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-M	29516-011	Solid	—	—	≈ 9.5g	
NHH-N	↓ -024 -025	Solid	—	—	≈ 9g	
NHH-O	↓ -016 -017	Solid	—	—	≈ 10.5g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 6
 Composite Lab ID.: 29517-006 Composite Final Volume: 28 gallons
 Composite Matrix: Solid Composite Container(s): 7x5 gallon buckets
 Composite Prepared Date: 08/21/17 1x1 gallon bucket
 Composite Prepared Time: 1205
 Initials: BS / JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-P	29516-003 -004	Solid	—	—	~8.5 gallons	
NHH-Q	↓ -054	Solid	—	—	~14 gallons	
NHH-R	-037 -038	Solid	—	—	~7 gallons	
NHH-S	↓ -035 -036	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 7
 Composite Lab ID.: 29517-007 Composite Final Volume: 31 gallons
 Composite Matrix: Solid Composite Container(s): 7 x 5 gallon buckets
 Composite Prepared Date: 08/21/17 1 x 1 gallon bucket
 Composite Prepared Time: 1540
 Initials: BGI JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-T	29516-031 -032	Solid	—	—	~9.5 gallons	
NHH-U	↓ -055	Solid	—	—	~14.5 gallons	
NHH-V	↓ -043 -044	Solid	—	—	~7 gallons	
NHH-W	↓ -014 -015	Solid	—	—	~7 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Composite Preparation Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: Composite 8
 Composite Lab ID.: 29517-008 Composite Final Volume: ~26 gallons
 Composite Matrix: Solid Composite Container(s): 50 gallon buckets
 Composite Prepared Date: 08/21/17 100 gallon bucket
 Composite Prepared Time: 1130
 Initials: Dr. JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-X	29516-045 046	Solid	—	—	~9.5 gallons	
NHH-Y	↓ -018 019	Solid	—	—	~8.5 gallons	
NHH-Z	↓ -001 002	Solid	—	—	~11.5 gallons	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>

Laboratory Homogenization Documentation

Project Number: 29516
 Project Name: New Haven Harbor
 Composite Identifier: CLDS Reference Site
 Composite Lab ID.: 29517-009 Composite Final Volume: ≈ 20 gallons
 Composite Matrix: Solid Composite Container(s): 4x5 gallons
 Composite Prepared Date: 08/21/17 1x1 gallon
 Composite Prepared Time: 1630
 Initials: JTP
 Protocol: ESI SOP 1478

This composite was prepared according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
NHH-CLDS	29516-047	Solid	—	few shells	≈ 20g	

Subsamples Removed:

Lab Number	Sample Use
29519	10-Day Solid Phase <i>L. plumulosus</i>
29520	10-Day Solid Phase <i>A. bahia</i>
29521	Elutriate Preparation <u>Ⓢ JTP 08/25/17</u>
29524	28-Day Bio-accumulation <i>M. nasuta</i>
29525	28-Day Bio-accumulation <i>N. virens</i>



Aquatic Research Organisms

99MnAR0082217

DATA SHEET

I. Organism History

Species Macoma nasuta
Source: Lab reared _____ Hatchery reared _____ Field collected ☒
Hatch date Mixed ages Receipt date 08/22/17
Lot number 082217MN Strain WILD
Brood origination WA

II. Water Quality

Temperature 13 °C Salinity 30 ppt D.O. SAT ppm
pH 8.4 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater ☒ Other _____
Recirculating _____ Flow through ☒ Static renewal _____
DIET: Flake food _____ Phytoplankton _____ Trout chow _____
Artemia _____ Rotifers _____ YCT _____ Other _____
Prophylactic treatments: _____
Comments: _____

IV. Shipping Information

Client: EST # of Organisms 2000
Carrier: PICKUP Date shipped 8/22/17
Biologist: John Antebi

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Macoma nasuta 28 Day Study # 29524 - AECOM New Haven

Day	Date	Water Qualities and Flow	Initial	Day	Date	Water Qualities and Flow	Initial
0	08/29/17	✓	BG	15	09/13/17	✓	DD
1	08/30/17	✓	DD	16	09/14/17	✓	BG
2	08/31/17	✓	MS	17	09/15/17	✓	JTP
3	09/01/17	✓	BG	18	09/16/17	✓	BG
4	09/02/17	✓	BG	19	09/17/17	✓	DD
5	09/03/17	✓	MS	20	09/18/17	✓	DD
6	09/04/17	✓	MS	21	09/19/17	✓	BG
7	09/05/17	✓	DD	22	09/20/17	✓	DD
8	09/06/17	✓	BG	23	09/21/17	✓	DD
9	09/07/17	✓	DD	24	09/22/17	✓	CFS
10	09/08/17	✓	BG	25	09/23/17	✓	BG
11	09/09/17	✓	BG	26	09/24/17	✓	DD
12	09/10/17	✓	DD	27	09/25/17	✓	DD
13	09/11/17	✓	DD	28	09/26/17	✓	JTP
14	09/12/17	✓	BG				

Notes:

Daily Flow Rates for *Macoma nasuta* - AECOM - New Haven

	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	BG	✓	DD	✓	MS	✓	BG	✓	BG	✓	MS	✓	MS
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓	BG	✓		✓		✓	BG	✓		✓		✓	
Comp 6	✓		✓	DD	✓	MS	✓		✓	BG	✓	MS	✓	MS
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	
	Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	DD	✓	BG	✓	DD	✓	BG	✓	BG	✓	DD	✓	DD
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓		✓	BG	✓		✓	BG	✓		✓		✓	
Comp 6	✓	DD	✓		✓	DD	✓		✓	BG	✓	DD	✓	DD
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	

Assay Initiation Date 08/29/17

Assay Termination Date 09/26/17

Daily Flow Rates for *Macoma nasuta* - AECOM - New Haven

	Day 14		Day 15		Day 16		Day 17		Day 18		Day 19		Day 20	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	BG	✓	DD	✓	BG	✓	JTP	✓	BG	✓	DD	✓	DD
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 14		Day 15		Day 16		Day 17		Day 18		Day 19		Day 20	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓		✓		✓		✓		✓		✓		✓	DD
Comp 6	✓	BG	✓	DD	✓	BG	✓	JTP	✓	BG	✓	DD	✓	
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	
	Day 21		Day 22		Day 23		Day 24		Day 25		Day 26		Day 27	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	BG	✓	DD	✓	DD	✓	CFS	✓	BG	✓	DD	✓	DD
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 21		Day 22		Day 23		Day 24		Day 25		Day 26		Day 27	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓		✓		✓		✓		✓	BG	✓	DD	✓	DD
Comp 6	✓	BG	✓	DD	✓	DD	✓	CFS	✓		✓		✓	
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	

Assay Initiation Date 08/29/17

Assay Termination Date 09/26/17

Daily Observations for *Macoma nasuta* Study # 29524 - AECOM New Haven

TANK	DAY														
	Rep	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Laboratory Control	A	✓	✓	✓	✓	✓	✓	✓	15	15	15	15	15	✓	✓
Laboratory Control	B	1R	✓	✓	15	✓	✓	✓	✓	15	25	25	25	25	25
Laboratory Control	C	1R	15	15	15	15	15	✓	15	15	15	✓	✓	✓	✓
Laboratory Control	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	25
Laboratory Control	E	1R	✓	✓	✓	15	15	✓	✓	15	15	25	25	15	1D
CLDS Reference	A	1R	15	15	15	15	15	15	15	15	15	15	15	15	15
CLDS Reference	B	✓	✓	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	C	2R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	A	4R	15	15	15	15	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	B	5R	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	C	1R	✓	✓	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	15
Composite 1	D	3R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	E	3R	✓	✓	✓	✓	✓	✓	✓	✓	15	15	15	✓	✓
Composite 2	A	7R	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	B	5R	✓	15	✓	✓	✓	✓	15	✓	✓	✓	✓	✓	✓
Composite 2	C	5R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	D	2R	15	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	E	3R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	A	2R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	B	4R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	C	3R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	D	5R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	E	4R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial		BG/DD	BG	BG	BG	MS	MS	DD	DD	DD	BG	BG	DD	DD	BG
Date		08/30/17	08/31/17	09/01/17	09/02/17	09/03/17	09/04/17	09/05/17	09/06/17	09/07/17	09/08/17	09/09/17	09/10/17	09/11/17	09/12/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Macoma nasuta* Study # 29524 - AECOM New Haven

TANK	DAY														
	Rep	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Composite 4	A	2R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	B	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	D	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	E	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	B	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	C	2R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	E	6R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	A	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	D	5R	✓	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	E	4R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	A	2R	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	D	2R	1S	1S	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	E	7R	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	A	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	B	1R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	D	2R	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	E	3R	✓	1S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial	BG/DD	BG	BG	BG	MS	MS	DD	DD	DD	BG	BG	DD	DD	BG	
Date	08/30/17	08/31/17	09/01/17	09/02/17	09/03/17	09/04/17	09/05/17	09/06/17	09/07/17	09/08/17	09/09/17	09/10/17	09/11/17	09/12/17	

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Macoma nasuta* Study # 29524 - AECOM New Haven

TANK	DAY													
	Rep	15	16	17	18	19	20	21	22	23	24	25	26	27
Laboratory Control	A	1S	1S	✓	1S	1S	1S	✓	✓	✓	1S	✓	1S	1S
Laboratory Control	B	2S	2S	✓	2S	1S/D	1S	✓	✓	✓	1S	1S	✓	✓
Laboratory Control	C	✓	1S	✓	1S	1S	1S	1S	1S	1S	1S	1S	2S	1S
Laboratory Control	D	1S	1S/D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	E	✓	1S	✓	✓	✓	✓	1S	1S	✓	1S	✓	✓	1S
CLDS Reference	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	B	✓	✓	✓	✓	✓	✓	1S	1S	✓	✓	1S	✓	✓
Composite 1	C	1D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	1S	✓	✓	✓
Composite 3	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial Date		09/13/17	09/14/17	09/15/17	09/16/17	09/17/17	09/18/17	09/19/17	09/20/17	09/21/17	09/22/17	09/23/17	09/24/17	09/25/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Macoma nasuta* Study # 29524 - AECOM New Haven

TANK	DAY													
	Rep	15	16	17	18	19	20	21	22	23	24	25	26	27
Composite 4	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	E	✓	✓	✓	IS	IS	1D	✓	✓	✓	✓	✓	✓	✓
Initial Date		DD 09/13/17	BG 09/14/17	JTP 09/15/17	BG 09/16/17	DD 09/17/17	DD 09/18/17	BG 09/19/17	DD 09/20/17	DD 09/21/17	CFJ 09/22/17	BG 09/23/17	DD 09/24/17	DD 09/25/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	00	8/29/2017 09:00:09	12.5	113.7	7.82	46266	29.97
Laboratory Control	B	00	8/29/2017 09:00:28	12.4	108.2	7.83	46252	29.96
Laboratory Control	C	00	8/29/2017 09:00:43	12.3	97.6	7.79	46181	29.9
Laboratory Control	D	00	8/29/2017 09:01:03	12.2	105.3	7.81	46293	29.98
Laboratory Control	E	00	8/29/2017 09:01:20	12.2	98.9	7.78	46293	29.98
CLDS Reference Site	A	00	8/29/2017 09:01:50	12.3	86.6	7.76	46222	29.93
CLDS Reference Site	B	00	8/29/2017 09:02:10	12.3	89.1	7.76	46175	29.9
CLDS Reference Site	C	00	8/29/2017 09:02:32	12.3	102.4	7.8	46221	29.93
CLDS Reference Site	D	00	8/29/2017 09:02:49	12.3	91.4	7.78	46290	29.98
CLDS Reference Site	E	00	8/29/2017 09:03:15	12.3	102.6	7.8	46249	29.95
Composite 1	A	00	8/29/2017 09:03:36	12.5	97.1	7.82	45931	29.73
Composite 1	B	00	8/29/2017 09:04:06	12.6	96	7.81	46258	29.97
Composite 1	C	00	8/29/2017 09:04:30	12.5	101.8	7.81	46221	29.94
Composite 1	D	00	8/29/2017 09:04:51	12.4	91.8	7.8	46082	29.84
Composite 1	E	00	8/29/2017 09:05:14	12.4	99	7.81	46204	29.92
Composite 2	A	00	8/29/2017 09:05:33	12.4	94.4	7.76	46139	29.88
Composite 2	B	00	8/29/2017 09:05:51	12.4	90.2	7.73	46111	29.86
Composite 2	C	00	8/29/2017 09:06:17	12.4	100.3	7.78	46213	29.93
Composite 2	D	00	8/29/2017 09:06:48	12.4	82.8	7.72	45884	29.69
Composite 2	E	00	8/29/2017 09:07:19	12.4	84.6	7.71	46081	29.83
Composite 3	A	00	8/29/2017 09:07:42	12.4	98.7	7.78	45685	29.55
Composite 3	B	00	8/29/2017 09:08:04	12.4	89.5	7.75	46111	29.86
Composite 3	C	00	8/29/2017 09:08:29	12.4	91.2	7.76	45211	29.21
Composite 3	D	00	8/29/2017 09:08:47	12.5	85.5	7.73	46091	29.85
Composite 3	E	00	8/29/2017 09:09:17	12.5	102.2	7.78	46249	29.96
Composite 4	A	00	8/29/2017 09:09:30	12.5	102.3	7.8	46138	29.88
Composite 4	B	00	8/29/2017 09:10:00	12.6	65.8	7.62	45250	29.25
Composite 4	C	00	8/29/2017 09:10:24	12.6	82.8	7.68	46128	29.88
Composite 4	D	00	8/29/2017 09:10:46	12.6	94.4	7.73	46134	29.88
Composite 4	E	00	8/29/2017 09:11:05	12.5	101.6	7.85	45249	29.24
Composite 5	A	00	8/29/2017 09:11:30	12.5	98.7	7.78	46161	29.9
Composite 5	B	00	8/29/2017 09:12:07	12.5	81.8	7.64	46212	29.93
Composite 5	C	00	8/29/2017 09:12:31	12.5	101	7.78	46232	29.95
Composite 5	D	00	8/29/2017 09:12:53	12.5	97.3	7.74	46221	29.94
Composite 5	E	00	8/29/2017 09:13:14	12.5	99.4	7.77	46197	29.92
Composite 6	A	00	8/29/2017 09:13:31	12.5	95.5	7.76	46164	29.9
Composite 6	B	00	8/29/2017 09:14:26	12.3	100.4	7.96	45976	29.76
Composite 6	C	00	8/29/2017 09:14:47	12.2	100.3	8.09	45516	29.42
Composite 6	D	00	8/29/2017 09:15:17	12.2	74.8	7.72	45471	29.39
Composite 6	E	00	8/29/2017 09:15:42	12	80.7	7.65	45953	29.73
Composite 7	A	00	8/29/2017 09:16:06	11.9	100.5	7.99	45634	29.49
Composite 7	B	00	8/29/2017 09:16:42	11.8	101.5	8.02	45771	29.59
Composite 7	C	00	8/29/2017 09:17:03	11.8	100.3	8.1	45596	29.46
Composite 7	D	00	8/29/2017 09:17:33	12	100.5	7.97	46030	29.78
Composite 7	E	00	8/29/2017 09:17:53	12	99.4	8.06	45620	29.49
Composite 8	A	00	8/29/2017 09:18:19	11.9	100.8	7.95	46068	29.81
Composite 8	B	00	8/29/2017 09:18:36	12	101.1	7.91	46159	29.87
Composite 8	C	00	8/29/2017 09:18:58	12	102.6	7.88	46297	29.98
Composite 8	D	00	8/29/2017 09:19:24	12.3	100	7.87	46089	29.84
Composite 8	E	00	8/29/2017 09:19:38	12.2	100	7.91	45833	29.65

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	01	8/30/2017 11:26:32	12.7	104.6	7.74	47541	30.9
Laboratory Control	B	01	8/30/2017 11:26:53	12.8	102.6	7.76	47486	30.86
Laboratory Control	C	01	8/30/2017 11:27:10	12.9	99.9	7.78	47508	30.88
Laboratory Control	D	01	8/30/2017 11:27:30	13	101.9	7.79	47507	30.88
Laboratory Control	E	01	8/30/2017 11:27:41	12.7	100.1	7.78	47532	30.89
CLDS Reference Site	A	01	8/30/2017 11:27:52	12.6	99.3	7.79	47514	30.88
CLDS Reference Site	B	01	8/30/2017 11:28:47	12.8	100.4	7.81	47488	30.86
CLDS Reference Site	C	01	8/30/2017 11:28:59	12.7	101.4	7.82	47498	30.87
CLDS Reference Site	D	01	8/30/2017 11:29:09	12.8	101.5	7.82	47473	30.85
CLDS Reference Site	E	01	8/30/2017 11:29:21	12.5	101.5	7.82	47511	30.87
Composite 1	A	01	8/30/2017 11:29:31	12.6	100.6	7.82	47513	30.88
Composite 1	B	01	8/30/2017 11:29:46	12.9	100.7	7.82	47482	30.86
Composite 1	C	01	8/30/2017 11:30:26	12.9	100.7	7.83	47502	30.88
Composite 1	D	01	8/30/2017 11:30:44	12.5	94	7.8	47473	30.84
Composite 1	E	01	8/30/2017 11:30:59	12.7	98.7	7.81	47531	30.89
Composite 2	A	01	8/30/2017 11:31:08	12.8	99.2	7.81	47511	30.88
Composite 2	B	01	8/30/2017 11:31:17	12.7	98.7	7.81	47451	30.83
Composite 2	C	01	8/30/2017 11:31:30	13.1	100.7	7.82	47452	30.85
Composite 2	D	01	8/30/2017 11:32:09	12.5	99.2	7.84	47453	30.83
Composite 2	E	01	8/30/2017 11:32:24	12.5	96.3	7.8	47472	30.84
Composite 3	A	01	8/30/2017 11:32:46	12.4	96.5	7.79	47369	30.76
Composite 3	B	01	8/30/2017 11:32:59	12.7	97.4	7.79	47441	30.83
Composite 3	C	01	8/30/2017 11:33:11	12.6	98.1	7.8	47388	30.78
Composite 3	D	01	8/30/2017 11:33:26	12.9	100	7.81	47430	30.83
Composite 3	E	01	8/30/2017 11:35:41	13.5	101.2	7.86	47364	30.8
Composite 4	A	01	8/30/2017 11:35:54	13.1	100.6	7.85	47398	30.81
Composite 4	B	01	8/30/2017 11:36:06	12.9	100.2	7.86	47373	30.78
Composite 4	C	01	8/30/2017 11:36:21	13.1	98.3	7.82	47406	30.81
Composite 4	D	01	8/30/2017 11:36:30	13.2	99.7	7.82	47395	30.81
Composite 4	E	01	8/30/2017 11:36:43	12.5	100.2	7.92	46353	30.03
Composite 5	A	01	8/30/2017 11:37:42	12.8	96.3	7.78	47459	30.84
Composite 5	B	01	8/30/2017 11:37:57	13	99.1	7.8	47429	30.83
Composite 5	C	01	8/30/2017 11:38:08	13.1	99.9	7.81	47426	30.83
Composite 5	D	01	8/30/2017 11:38:22	13.1	99.5	7.8	47441	30.84
Composite 5	E	01	8/30/2017 11:38:32	13	99.3	7.8	47422	30.82
Composite 6	A	01	8/30/2017 11:38:55	12.7	94.9	7.77	47477	30.85
Composite 6	B	01	8/30/2017 11:39:57	12.4	98.9	7.87	47467	30.83
Composite 6	C	01	8/30/2017 11:40:18	12.4	99.2	7.85	47458	30.83
Composite 6	D	01	8/30/2017 11:40:39	12.2	99.8	7.94	47189	30.62
Composite 6	E	01	8/30/2017 11:41:00	12.2	84.9	7.77	47499	30.85
Composite 7	A	01	8/30/2017 11:41:36	12.2	96.5	7.83	47465	30.82
Composite 7	B	01	8/30/2017 11:41:57	12.3	98.8	7.83	47468	30.83
Composite 7	C	01	8/30/2017 11:42:46	12.3	100	7.85	47479	30.84
Composite 7	D	01	8/30/2017 11:43:00	12.4	98.9	7.84	47459	30.83
Composite 7	E	01	8/30/2017 11:43:16	12.3	100.2	7.88	47430	30.8
Composite 8	A	01	8/30/2017 11:43:29	12.4	100.1	7.86	47462	30.83
Composite 8	B	01	8/30/2017 11:43:44	12.3	98.8	7.83	47462	30.83
Composite 8	C	01	8/30/2017 11:44:06	12.7	100.7	7.84	47420	30.81
Composite 8	D	01	8/30/2017 11:44:34	12.4	98.5	7.82	47443	30.82
Composite 8	E	01	8/30/2017 11:44:52	12.5	97.4	7.81	47421	30.8

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	02	8/31/2017 09:18:28	12.5	99	7.75	45012	29.07
Laboratory Control	B	02	8/31/2017 09:18:56	12.4	95.7	7.72	44977	29.05
Laboratory Control	C	02	8/31/2017 09:20:12	12.4	97.1	7.71	44921	29
Laboratory Control	D	02	8/31/2017 09:20:29	12.4	95.4	7.7	45172	29.18
Laboratory Control	E	02	8/31/2017 09:21:25	12.4	82.1	7.67	44987	29.05
CLDS Reference Site	A	02	8/31/2017 09:22:01	12.4	97.7	7.73	45000	29.06
CLDS Reference Site	B	02	8/31/2017 09:22:23	12.4	99.9	7.76	45085	29.12
CLDS Reference Site	C	02	8/31/2017 09:22:42	12.4	99.3	7.75	44868	28.97
CLDS Reference Site	D	02	8/31/2017 09:23:08	12.4	100.5	7.78	45071	29.11
CLDS Reference Site	E	02	8/31/2017 09:23:36	12.5	98.8	7.77	45195	29.2
Composite 1	A	02	8/31/2017 09:23:59	12.6	95.3	7.73	44914	29.01
Composite 1	B	02	8/31/2017 09:24:39	12.6	100.1	7.76	44988	29.06
Composite 1	C	02	8/31/2017 09:25:05	12.5	90.7	7.71	45223	29.22
Composite 1	D	02	8/31/2017 09:25:37	12.5	98.7	7.75	45073	29.12
Composite 1	E	02	8/31/2017 09:25:59	12.5	94.7	7.72	44920	29.01
Composite 2	A	02	8/31/2017 09:26:25	12.5	98.1	7.76	45113	29.14
Composite 2	B	02	8/31/2017 09:26:49	12.5	99.1	7.77	45032	29.09
Composite 2	C	02	8/31/2017 09:27:21	12.5	98.9	7.8	45129	29.16
Composite 2	D	02	8/31/2017 09:27:52	12.5	90.1	7.71	45114	29.14
Composite 2	E	02	8/31/2017 09:28:15	12.4	97.3	7.73	44992	29.06
Composite 3	A	02	8/31/2017 09:28:37	12.5	95.9	7.72	44919	29.01
Composite 3	B	02	8/31/2017 09:28:58	12.5	97.9	7.74	44996	29.06
Composite 3	C	02	8/31/2017 09:29:24	12.5	87.3	7.68	45302	29.28
Composite 3	D	02	8/31/2017 09:30:04	12.5	103.4	7.84	45079	29.12
Composite 3	E	02	8/31/2017 09:30:26	12.6	102	7.86	45049	29.1
Composite 4	A	02	8/31/2017 09:30:51	12.6	101.6	7.86	45062	29.11
Composite 4	B	02	8/31/2017 09:31:29	12.6	61.2	7.63	45118	29.15
Composite 4	C	02	8/31/2017 09:32:06	12.6	76.9	7.62	45300	29.28
Composite 4	D	02	8/31/2017 09:32:36	12.6	101.1	7.86	44561	28.75
Composite 4	E	02	8/31/2017 09:33:13	12.5	95.1	7.74	44913	29
Composite 5	A	02	8/31/2017 09:33:38	12.5	99	7.8	45319	29.29
Composite 5	B	02	8/31/2017 09:34:04	12.5	101.1	7.83	45221	29.22
Composite 5	C	02	8/31/2017 09:34:28	12.5	89.6	7.7	45152	29.17
Composite 5	D	02	8/31/2017 09:35:38	12.5	98.1	7.76	45124	29.15
Composite 5	E	02	8/31/2017 09:36:04	12.6	93.2	7.7	45086	29.13
Composite 6	A	02	8/31/2017 09:37:05	12.3	101.2	7.85	45193	29.2
Composite 6	B	02	8/31/2017 09:37:22	12.3	100.7	7.85	45194	29.19
Composite 6	C	02	8/31/2017 09:37:44	12.2	101	7.92	45112	29.13
Composite 6	D	02	8/31/2017 09:38:05	12.1	101.5	7.86	44999	29.05
Composite 6	E	02	8/31/2017 09:38:49	12	101.3	7.83	45068	29.09
Composite 7	A	02	8/31/2017 09:39:24	11.9	101.1	7.84	45120	29.13
Composite 7	B	02	8/31/2017 09:39:47	11.9	102.2	7.87	45116	29.12
Composite 7	C	02	8/31/2017 09:40:12	12	99.8	7.84	45274	29.24
Composite 7	D	02	8/31/2017 09:40:36	12	101.9	7.9	45287	29.25
Composite 7	E	02	8/31/2017 09:41:26	12.1	101.5	7.88	45051	29.08
Composite 8	A	02	8/31/2017 09:41:40	12.1	100.5	7.85	44990	29.04
Composite 8	B	02	8/31/2017 09:42:03	12.1	102.4	7.87	44984	29.04
Composite 8	C	02	8/31/2017 09:42:38	12.3	99	7.81	44902	28.99
Composite 8	D	02	8/31/2017 09:43:02	12.3	97	7.77	44944	29.02
Composite 8	E	02	8/31/2017 16:16:49	12.3	99.1	7.72	44942	29.02

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	03	9/1/2017 09:52:50	12.6	118.3	7.73	45497	29.42
Laboratory Control	B	03	9/1/2017 09:53:15	12.5	111.4	7.73	45489	29.41
Laboratory Control	C	03	9/1/2017 09:53:45	12.5	106.6	7.7	45463	29.39
Laboratory Control	D	03	9/1/2017 09:54:00	12.5	106.8	7.7	45455	29.39
Laboratory Control	E	03	9/1/2017 09:54:25	12.4	102.2	7.7	45524	29.44
CLDS Reference Site	A	03	9/1/2017 09:54:45	12.4	103.7	7.71	45462	29.39
CLDS Reference Site	B	03	9/1/2017 09:55:07	12.5	103.4	7.72	45455	29.39
CLDS Reference Site	C	03	9/1/2017 09:55:26	12.5	103	7.73	45452	29.39
CLDS Reference Site	D	03	9/1/2017 09:55:39	12.5	102.8	7.72	45443	29.38
CLDS Reference Site	E	03	9/1/2017 09:56:04	12.5	102	7.76	45465	29.4
Composite 1	A	03	9/1/2017 09:56:26	12.5	101.3	7.74	45468	29.4
Composite 1	B	03	9/1/2017 09:56:45	12.6	101.2	7.71	45421	29.37
Composite 1	C	03	9/1/2017 09:57:09	12.5	101.3	7.75	45467	29.4
Composite 1	D	03	9/1/2017 09:57:45	12.5	97.2	7.73	45588	29.48
Composite 1	E	03	9/1/2017 09:58:06	12.5	99.7	7.74	45471	29.4
Composite 2	A	03	9/1/2017 09:58:26	12.5	97.8	7.72	45484	29.41
Composite 2	B	03	9/1/2017 09:58:47	12.5	98.6	7.74	45512	29.43
Composite 2	C	03	9/1/2017 09:59:03	12.5	99.6	7.75	45478	29.41
Composite 2	D	03	9/1/2017 09:59:25	12.5	99.2	7.76	45494	29.42
Composite 2	E	03	9/1/2017 09:59:51	12.5	97.3	7.73	45463	29.4
Composite 3	A	03	9/1/2017 10:00:07	12.5	99.3	7.73	45445	29.38
Composite 3	B	03	9/1/2017 10:00:38	12.5	98.7	7.72	45444	29.38
Composite 3	C	03	9/1/2017 10:00:50	12.5	98.2	7.73	45485	29.41
Composite 3	D	03	9/1/2017 10:01:02	12.5	96.3	7.71	45631	29.52
Composite 3	E	03	9/1/2017 10:01:28	12.4	101	7.82	45562	29.46
Composite 4	A	03	9/1/2017 10:01:46	12.5	100.1	7.84	45557	29.46
Composite 4	B	03	9/1/2017 10:02:13	12.5	99.6	7.84	45553	29.46
Composite 4	C	03	9/1/2017 10:02:41	12.5	98.1	7.81	45596	29.49
Composite 4	D	03	9/1/2017 10:03:06	12.5	96.3	7.76	45743	29.6
Composite 4	E	03	9/1/2017 10:03:28	12.5	99.6	7.82	45403	29.35
Composite 5	A	03	9/1/2017 10:04:06	12.5	98.2	7.73	45448	29.39
Composite 5	B	03	9/1/2017 10:04:29	12.5	97	7.81	45774	29.62
Composite 5	C	03	9/1/2017 10:04:51	12.5	99.3	7.83	45615	29.5
Composite 5	D	03	9/1/2017 10:05:13	12.5	92.4	7.71	45576	29.48
Composite 5	E	03	9/1/2017 10:05:34	12.5	97.4	7.76	45540	29.45
Composite 6	A	03	9/1/2017 10:05:46	12.6	95.8	7.73	45497	29.42
Composite 6	B	03	9/1/2017 10:06:33	12.4	98.7	7.84	45739	29.59
Composite 6	C	03	9/1/2017 10:06:56	12.4	98.3	7.86	45830	29.65
Composite 6	D	03	9/1/2017 10:07:12	12.3	99.2	7.9	45730	29.58
Composite 6	E	03	9/1/2017 10:07:34	12.2	99.9	7.86	45526	29.43
Composite 7	A	03	9/1/2017 10:07:49	12.1	99.5	7.83	45604	29.48
Composite 7	B	03	9/1/2017 10:08:09	12	99.6	7.85	45760	29.59
Composite 7	C	03	9/1/2017 10:08:45	12	100.3	7.88	45703	29.55
Composite 7	D	03	9/1/2017 10:09:14	12.2	98.2	7.82	45655	29.52
Composite 7	E	03	9/1/2017 10:09:47	12.2	99.3	7.86	45700	29.55
Composite 8	A	03	9/1/2017 10:10:10	12.3	99.4	7.82	45556	29.45
Composite 8	B	03	9/1/2017 10:10:35	12.3	99.6	7.79	45487	29.4
Composite 8	C	03	9/1/2017 10:11:02	12.3	100	7.82	45526	29.43
Composite 8	D	03	9/1/2017 10:11:32	12.4	98	7.79	45546	29.45
Composite 8	E	03	9/1/2017 10:11:55	12.3	97.6	7.76	45499	29.42

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	04	9/2/2017 09:04:32	12.5	118.9	7.78	46421	30.09
Laboratory Control	B	04	9/2/2017 09:04:50	12.5	114.9	7.78	46416	30.08
Laboratory Control	C	04	9/2/2017 09:05:16	12.5	111.5	7.75	46435	30.09
Laboratory Control	D	04	9/2/2017 09:05:41	12.5	109.7	7.76	46501	30.14
Laboratory Control	E	04	9/2/2017 09:06:02	12.4	106.4	7.75	46417	30.08
CLDS Reference Site	A	04	9/2/2017 09:06:18	12.4	106.2	7.75	46402	30.07
CLDS Reference Site	B	04	9/2/2017 09:06:45	12.4	106.7	7.76	46406	30.07
CLDS Reference Site	C	04	9/2/2017 09:07:06	12.4	107	7.77	46416	30.08
CLDS Reference Site	D	04	9/2/2017 09:07:28	12.5	105.7	7.76	46429	30.09
CLDS Reference Site	E	04	9/2/2017 09:07:52	12.5	104	7.8	46409	30.07
Composite 1	A	04	9/2/2017 09:08:17	12.5	102.8	7.78	46394	30.07
Composite 1	B	04	9/2/2017 09:08:42	12.6	104.1	7.79	46441	30.1
Composite 1	C	04	9/2/2017 09:09:09	12.5	103.7	7.8	46412	30.08
Composite 1	D	04	9/2/2017 09:09:30	12.5	103.4	7.83	46362	30.04
Composite 1	E	04	9/2/2017 09:09:45	12.4	102.8	7.8	46402	30.07
Composite 2	A	04	9/2/2017 09:10:02	12.4	101.5	7.78	46418	30.08
Composite 2	B	04	9/2/2017 09:10:23	12.4	101.6	7.8	46371	30.05
Composite 2	C	04	9/2/2017 09:10:41	12.5	101.7	7.8	46392	30.06
Composite 2	D	04	9/2/2017 09:11:05	12.5	101.5	7.8	46405	30.07
Composite 2	E	04	9/2/2017 09:11:19	12.5	100.1	7.77	46397	30.07
Composite 3	A	04	9/2/2017 09:11:34	12.5	101.5	7.78	46408	30.07
Composite 3	B	04	9/2/2017 09:12:10	12.5	100.9	7.78	46399	30.07
Composite 3	C	04	9/2/2017 09:12:38	12.5	97.3	7.74	46377	30.05
Composite 3	D	04	9/2/2017 09:13:08	12.4	102.8	7.86	46381	30.05
Composite 3	E	04	9/2/2017 09:13:25	12.4	102.8	7.87	46332	30.02
Composite 4	A	04	9/2/2017 09:13:42	12.5	100.4	7.86	46355	30.04
Composite 4	B	04	9/2/2017 09:14:02	12.5	100.2	7.84	46326	30.02
Composite 4	C	04	9/2/2017 09:14:23	12.5	98.8	7.82	46388	30.06
Composite 4	D	04	9/2/2017 09:14:44	12.5	101.8	7.85	46315	30.01
Composite 4	E	04	9/2/2017 09:15:10	12.5	101.3	7.79	46433	30.09
Composite 5	A	04	9/2/2017 09:15:33	12.5	100.6	7.89	46416	30.08
Composite 5	B	04	9/2/2017 09:15:56	12.5	101.3	7.86	46393	30.06
Composite 5	C	04	9/2/2017 09:16:21	12.5	95.9	7.75	46365	30.04
Composite 5	D	04	9/2/2017 09:16:38	12.6	99.5	7.8	46367	30.05
Composite 5	E	04	9/2/2017 09:16:56	12.6	97.9	7.76	46389	30.06
Composite 6	A	04	9/2/2017 09:17:41	12.4	101.4	7.87	46424	30.08
Composite 6	B	04	9/2/2017 09:17:56	12.4	100.3	7.88	46522	30.15
Composite 6	C	04	9/2/2017 09:18:14	12.3	101.1	7.92	46385	30.05
Composite 6	D	04	9/2/2017 09:18:37	12.3	101.3	7.88	46357	30.03
Composite 6	E	04	9/2/2017 09:18:56	12.2	100.8	7.86	46392	30.05
Composite 7	A	04	9/2/2017 09:18:58	12.2	100.7	7.86	46420	30.07
Composite 7	B	04	9/2/2017 09:19:23	12.1	100.8	7.86	46515	30.14
Composite 7	C	04	9/2/2017 09:19:59	12.1	101.2	7.9	46513	30.13
Composite 7	D	04	9/2/2017 09:20:19	12.3	100	7.85	46436	30.08
Composite 7	E	04	9/2/2017 09:20:41	12.3	101.3	7.88	46440	30.09
Composite 8	A	04	9/2/2017 09:21:06	12.3	100.7	7.84	46482	30.12
Composite 8	B	04	9/2/2017 09:21:17	12.4	101.2	7.83	46444	30.1
Composite 8	C	04	9/2/2017 09:21:39	12.4	101.4	7.85	46429	30.08
Composite 8	D	04	9/2/2017 09:22:09	12.4	100	7.83	46367	30.04
Composite 8	E	04	9/2/2017 09:22:29	12.4	100	7.8	46370	30.04

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	05	9/3/2017 11:53:26	12.6	117.8	7.79	44599	28.78
Laboratory Control	B	05	9/3/2017 11:53:51	12.5	114.6	7.79	44561	28.75
Laboratory Control	C	05	9/3/2017 11:54:15	12.5	111.4	7.76	44544	28.74
Laboratory Control	D	05	9/3/2017 11:54:36	12.5	111.9	7.77	44546	28.74
Laboratory Control	E	05	9/3/2017 11:54:53	12.4	108.3	7.77	44549	28.74
CLDS Reference Site	A	05	9/3/2017 11:55:10	12.5	106.7	7.76	44531	28.73
CLDS Reference Site	B	05	9/3/2017 11:55:35	12.5	106.3	7.77	44542	28.73
CLDS Reference Site	C	05	9/3/2017 11:56:12	12.5	106.3	7.78	44529	28.73
CLDS Reference Site	D	05	9/3/2017 11:56:35	12.5	105.6	7.78	44530	28.73
CLDS Reference Site	E	05	9/3/2017 11:56:55	12.5	105.6	7.81	44536	28.73
Composite 1	A	05	9/3/2017 11:57:11	12.6	103.7	7.79	44541	28.74
Composite 1	B	05	9/3/2017 11:57:29	12.6	104.6	7.8	44558	28.75
Composite 1	C	05	9/3/2017 11:58:01	12.6	104	7.81	44542	28.74
Composite 1	D	05	9/3/2017 11:58:15	12.5	103.6	7.84	44545	28.74
Composite 1	E	05	9/3/2017 11:58:33	12.5	102.3	7.82	44541	28.73
Composite 2	A	05	9/3/2017 11:58:54	12.5	102	7.78	44537	28.73
Composite 2	B	05	9/3/2017 11:59:17	12.5	100.9	7.8	44546	28.74
Composite 2	C	05	9/3/2017 11:59:35	12.5	102	7.81	44547	28.74
Composite 2	D	05	9/3/2017 11:59:59	12.5	102.1	7.82	44544	28.74
Composite 2	E	05	9/3/2017 12:00:21	12.5	99	7.77	44537	28.73
Composite 3	A	05	9/3/2017 12:00:44	12.5	101.2	7.78	44543	28.74
Composite 3	B	05	9/3/2017 12:01:26	12.5	101.6	7.79	44548	28.74
Composite 3	C	05	9/3/2017 12:01:51	12.6	99.9	7.79	44563	28.75
Composite 3	D	05	9/3/2017 12:02:21	12.5	103.7	7.9	44582	28.77
Composite 3	E	05	9/3/2017 12:02:46	12.5	102.6	7.91	44503	28.71
Composite 4	A	05	9/3/2017 12:03:09	12.5	102.6	7.87	44528	28.73
Composite 4	B	05	9/3/2017 12:03:11	12.5	102.5	7.87	44531	28.73
Composite 4	C	05	9/3/2017 12:03:18	12.5	102.5	7.87	44535	28.73
Composite 4	D	05	9/3/2017 12:03:47	12.5	100.4	7.85	44518	28.72
Composite 4	E	05	9/3/2017 12:04:12	12.5	95.2	7.8	44550	28.74
Composite 5	A	05	9/3/2017 12:04:37	12.5	102.4	7.86	44532	28.73
Composite 5	B	05	9/3/2017 12:05:07	12.6	99.9	7.78	44571	28.76
Composite 5	C	05	9/3/2017 12:05:34	12.5	100.2	7.9	44573	28.76
Composite 5	D	05	9/3/2017 12:05:53	12.5	101.4	7.89	44576	28.76
Composite 5	E	05	9/3/2017 12:06:13	12.5	95.2	7.78	44575	28.76
Composite 6	A	05	9/3/2017 12:06:33	12.6	99.6	7.81	44561	28.75
Composite 6	B	05	9/3/2017 12:06:53	12.6	97.6	7.77	44585	28.77
Composite 6	C	05	9/3/2017 12:07:35	12.5	100.8	7.89	44674	28.83
Composite 6	D	05	9/3/2017 12:08:00	12.4	101.4	7.89	44644	28.81
Composite 6	E	05	9/3/2017 12:08:20	12.5	101.6	7.85	44583	28.76
Composite 7	A	05	9/3/2017 12:08:41	12.3	101	7.87	44574	28.75
Composite 7	B	05	9/3/2017 12:09:02	12.2	100.8	7.87	44618	28.78
Composite 7	C	05	9/3/2017 12:09:21	12.1	101.6	7.88	44698	28.83
Composite 7	D	05	9/3/2017 12:10:03	12.1	102.1	7.95	44705	28.84
Composite 7	E	05	9/3/2017 12:10:17	12.3	100.1	7.9	44616	28.78
Composite 8	A	05	9/3/2017 12:10:40	12.3	101.4	7.93	44642	28.8
Composite 8	B	05	9/3/2017 12:11:04	12.4	101.3	7.88	44602	28.78
Composite 8	C	05	9/3/2017 12:11:21	12.4	101.6	7.85	44614	28.78
Composite 8	D	05	9/3/2017 12:11:40	12.4	102	7.88	44637	28.8
Composite 8	E	05	9/3/2017 12:12:15	12.4	100.2	7.85	44577	28.76

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	06	9/4/2017 08:41:22	12.6	99.1	7.75	46034	29.81
Laboratory Control	B	06	9/4/2017 08:41:46	12.5	99.5	7.76	46020	29.8
Laboratory Control	C	06	9/4/2017 08:42:10	12.4	95.1	7.74	46052	29.82
Laboratory Control	D	06	9/4/2017 08:42:28	12.4	98.5	7.74	46086	29.84
Laboratory Control	E	06	9/4/2017 08:42:47	12.4	98.6	7.75	46066	29.82
CLDS Reference Site	A	06	9/4/2017 08:43:05	12.4	95.8	7.73	46048	29.81
CLDS Reference Site	B	06	9/4/2017 08:43:46	12.4	98	7.75	46048	29.81
CLDS Reference Site	C	06	9/4/2017 08:44:03	12.4	98.8	7.76	46058	29.82
CLDS Reference Site	D	06	9/4/2017 08:44:28	12.4	97.8	7.74	46142	29.88
CLDS Reference Site	E	06	9/4/2017 08:44:48	12.5	100.3	7.78	46045	29.81
Composite 1	A	06	9/4/2017 08:45:10	12.5	98.4	7.77	46040	29.81
Composite 1	B	06	9/4/2017 08:45:32	12.5	100.3	7.78	46085	29.84
Composite 1	C	06	9/4/2017 08:45:59	12.5	99.4	7.78	46043	29.81
Composite 1	D	06	9/4/2017 08:46:19	12.5	100.4	7.81	45993	29.78
Composite 1	E	06	9/4/2017 08:46:42	12.4	98.9	7.79	46048	29.81
Composite 2	A	06	9/4/2017 08:46:58	12.4	97.5	7.77	46060	29.82
Composite 2	B	06	9/4/2017 08:47:12	12.5	96.9	7.77	46004	29.78
Composite 2	C	06	9/4/2017 08:47:35	12.5	98.4	7.78	46033	29.8
Composite 2	D	06	9/4/2017 08:48:02	12.5	99	7.79	46035	29.81
Composite 2	E	06	9/4/2017 08:48:31	12.5	94.4	7.74	46016	29.79
Composite 3	A	06	9/4/2017 08:48:45	12.5	96.8	7.75	46028	29.8
Composite 3	B	06	9/4/2017 08:49:08	12.5	97.9	7.76	46015	29.79
Composite 3	C	06	9/4/2017 08:49:31	12.5	97.8	7.77	46035	29.81
Composite 3	D	06	9/4/2017 08:49:53	12.6	97.3	7.77	46001	29.78
Composite 3	E	06	9/4/2017 08:50:40	12.6	101.9	7.88	45971	29.76
Composite 4	A	06	9/4/2017 08:51:00	12.6	100.7	7.89	45881	29.7
Composite 4	B	06	9/4/2017 08:51:19	12.5	100	7.85	45991	29.78
Composite 4	C	06	9/4/2017 08:51:33	12.5	98.8	7.83	45961	29.75
Composite 4	D	06	9/4/2017 08:51:52	12.6	93.9	7.79	45909	29.72
Composite 4	E	06	9/4/2017 08:52:22	12.5	98.9	7.84	45986	29.77
Composite 5	A	06	9/4/2017 08:52:45	12.5	96.2	7.77	46042	29.81
Composite 5	B	06	9/4/2017 08:53:06	12.5	98.9	7.87	45951	29.75
Composite 5	C	06	9/4/2017 08:53:27	12.5	99.3	7.85	45992	29.78
Composite 5	D	06	9/4/2017 08:53:51	12.5	91.9	7.75	45985	29.77
Composite 5	E	06	9/4/2017 08:54:15	12.6	98	7.8	45987	29.77
Composite 6	A	06	9/4/2017 08:54:41	12.6	95	7.74	46016	29.8
Composite 6	B	06	9/4/2017 09:00:47	12.5	100.1	7.94	46041	29.81
Composite 6	C	06	9/4/2017 09:00:58	12.4	100.2	7.91	46025	29.8
Composite 6	D	06	9/4/2017 09:01:15	12.3	100.7	7.86	46046	29.81
Composite 6	E	06	9/4/2017 09:01:29	12.3	100.2	7.87	45972	29.75
Composite 7	A	06	9/4/2017 09:01:44	12.2	99.1	7.87	45998	29.77
Composite 7	B	06	9/4/2017 09:01:54	12.1	99.7	7.86	46045	29.8
Composite 7	C	06	9/4/2017 09:02:44	12.1	100.9	7.94	46055	29.81
Composite 7	D	06	9/4/2017 09:03:00	12.2	99.2	7.89	45971	29.75
Composite 7	E	06	9/4/2017 09:03:25	12.2	100.8	7.93	45981	29.76
Composite 8	A	06	9/4/2017 09:03:43	12.3	100.2	7.87	46044	29.8
Composite 8	B	06	9/4/2017 09:03:58	12.3	99.8	7.85	46069	29.82
Composite 8	C	06	9/4/2017 09:04:18	12.3	100.3	7.87	46035	29.8
Composite 8	D	06	9/4/2017 09:04:44	12.4	98.4	7.84	45961	29.75
Composite 8	E	06	9/4/2017 09:04:58	12.4	97.5	7.81	45995	29.77

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	07	9/5/2017 11:48:38	12.7	104.8	7.73	46326	30.02
Laboratory Control	B	07	9/5/2017 11:49:00	12.5	104.2	7.74	46002	29.78
Laboratory Control	C	07	9/5/2017 11:49:14	12.5	100.8	7.71	46022	29.8
Laboratory Control	D	07	9/5/2017 11:49:32	12.4	102.2	7.72	45994	29.77
Laboratory Control	E	07	9/5/2017 11:49:53	12.4	101.7	7.73	46104	29.85
CLDS Reference Site	A	07	9/5/2017 11:50:11	12.4	99	7.72	46043	29.81
CLDS Reference Site	B	07	9/5/2017 11:50:57	12.4	99.4	7.74	46051	29.82
CLDS Reference Site	C	07	9/5/2017 11:51:15	12.4	100.4	7.75	45998	29.78
CLDS Reference Site	D	07	9/5/2017 11:51:37	12.4	98.6	7.73	45980	29.76
CLDS Reference Site	E	07	9/5/2017 11:51:59	12.5	101.2	7.77	46029	29.8
Composite 1	A	07	9/5/2017 11:52:22	12.5	99.2	7.76	46076	29.84
Composite 1	B	07	9/5/2017 11:52:45	12.6	100.3	7.77	45993	29.78
Composite 1	C	07	9/5/2017 11:53:22	12.6	99.2	7.78	46060	29.83
Composite 1	D	07	9/5/2017 11:53:44	12.5	100.7	7.81	46230	29.95
Composite 1	E	07	9/5/2017 11:53:55	12.5	99	7.79	46101	29.85
Composite 2	A	07	9/5/2017 11:54:11	12.5	96.8	7.76	45991	29.77
Composite 2	B	07	9/5/2017 11:54:22	12.5	96.7	7.76	46161	29.9
Composite 2	C	07	9/5/2017 11:54:45	12.5	98.3	7.77	46082	29.84
Composite 2	D	07	9/5/2017 11:55:10	12.5	98.8	7.78	46061	29.82
Composite 2	E	07	9/5/2017 11:55:33	12.5	94.7	7.73	46053	29.82
Composite 3	A	07	9/5/2017 11:55:49	12.5	96	7.75	46064	29.83
Composite 3	B	07	9/5/2017 11:56:03	12.5	97.5	7.75	46039	29.81
Composite 3	C	07	9/5/2017 11:56:17	12.5	97.7	7.76	46060	29.82
Composite 3	D	07	9/5/2017 11:56:32	12.5	96.9	7.76	46232	29.95
Composite 3	E	07	9/5/2017 11:57:41	12.6	101.4	7.9	46285	29.99
Composite 4	A	07	9/5/2017 11:58:00	12.6	101	7.91	46266	29.98
Composite 4	B	07	9/5/2017 11:58:15	12.5	100.6	7.86	46092	29.85
Composite 4	C	07	9/5/2017 11:58:32	12.6	96.7	7.82	46266	29.98
Composite 4	D	07	9/5/2017 11:58:49	12.6	93.4	7.78	46265	29.97
Composite 4	E	07	9/5/2017 11:59:08	12.5	100	7.83	46088	29.85
Composite 5	A	07	9/5/2017 11:59:30	12.5	94.9	7.76	46008	29.79
Composite 5	B	07	9/5/2017 11:59:56	12.5	98.7	7.87	46270	29.98
Composite 5	C	07	9/5/2017 12:00:10	12.5	98.4	7.86	46256	29.97
Composite 5	D	07	9/5/2017 12:00:33	12.5	91.3	7.73	46174	29.91
Composite 5	E	07	9/5/2017 12:00:53	12.6	97.7	7.79	46154	29.89
Composite 6	A	07	9/5/2017 12:01:10	12.6	94.6	7.73	46144	29.89
Composite 6	B	07	9/5/2017 12:01:50	12.4	100.2	7.9	46501	30.14
Composite 6	C	07	9/5/2017 12:02:08	12.4	99.4	7.87	46269	29.97
Composite 6	D	07	9/5/2017 12:02:21	12.3	99.9	7.85	46130	29.87
Composite 6	E	07	9/5/2017 12:02:35	12.2	100.1	7.87	46282	29.97
Composite 7	A	07	9/5/2017 12:02:52	12.1	99.4	7.88	46459	30.09
Composite 7	B	07	9/5/2017 12:03:12	12	99.7	7.88	46509	30.12
Composite 7	C	07	9/5/2017 12:03:43	12	100.2	7.97	46578	30.18
Composite 7	D	07	9/5/2017 12:04:00	12.1	98.7	7.89	46406	30.06
Composite 7	E	07	9/5/2017 12:04:13	12.2	99.7	7.94	46486	30.12
Composite 8	A	07	9/5/2017 12:04:24	12.2	99.8	7.89	46136	29.87
Composite 8	B	07	9/5/2017 12:04:36	12.2	98.8	7.85	46104	29.84
Composite 8	C	07	9/5/2017 12:04:56	12.2	100.3	7.89	46316	29.99
Composite 8	D	07	9/5/2017 12:05:30	12.4	98	7.84	46254	29.96
Composite 8	E	07	9/5/2017 12:05:52	12.3	96.7	7.79	46137	29.87

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	08	9/6/2017 10:24:58	12.6	98.6	7.72	45186	29.2
Laboratory Control	B	08	9/6/2017 10:25:15	12.5	98.2	7.73	45099	29.13
Laboratory Control	C	08	9/6/2017 10:25:35	12.4	97.5	7.7	45185	29.19
Laboratory Control	D	08	9/6/2017 10:25:58	12.4	98.3	7.7	45196	29.2
Laboratory Control	E	08	9/6/2017 10:26:11	12.4	98.1	7.71	45219	29.22
CLDS Reference Site	A	08	9/6/2017 10:26:28	12.4	97.2	7.69	45223	29.22
CLDS Reference Site	B	08	9/6/2017 10:26:49	12.4	98.1	7.7	45215	29.21
CLDS Reference Site	C	08	9/6/2017 10:27:15	12.4	99.1	7.72	45179	29.19
CLDS Reference Site	D	08	9/6/2017 10:27:30	12.4	98.7	7.7	45168	29.18
CLDS Reference Site	E	08	9/6/2017 10:27:53	12.5	99.7	7.74	45206	29.21
Composite 1	A	08	9/6/2017 10:28:16	12.5	98.8	7.73	45242	29.24
Composite 1	B	08	9/6/2017 10:28:33	12.6	99.7	7.73	45160	29.18
Composite 1	C	08	9/6/2017 10:28:59	12.5	99.4	7.74	45227	29.23
Composite 1	D	08	9/6/2017 10:29:15	12.5	99.9	7.76	45316	29.29
Composite 1	E	08	9/6/2017 10:29:28	12.4	99.6	7.74	45233	29.23
Composite 2	A	08	9/6/2017 10:29:41	12.4	98.5	7.73	45177	29.19
Composite 2	B	08	9/6/2017 10:30:03	12.4	98.3	7.73	45264	29.25
Composite 2	C	08	9/6/2017 10:30:17	12.5	98.5	7.74	45256	29.25
Composite 2	D	08	9/6/2017 10:30:38	12.4	99.2	7.75	45235	29.23
Composite 2	E	08	9/6/2017 10:31:05	12.4	96.5	7.71	45234	29.23
Composite 3	A	08	9/6/2017 10:31:29	12.4	97.4	7.72	45247	29.24
Composite 3	B	08	9/6/2017 10:31:47	12.4	98.4	7.72	45189	29.2
Composite 3	C	08	9/6/2017 10:32:09	12.5	97.3	7.72	45257	29.25
Composite 3	D	08	9/6/2017 10:32:29	12.5	97.9	7.73	45344	29.31
Composite 3	E	08	9/6/2017 10:32:59	12.5	101	7.8	45286	29.27
Composite 4	A	08	9/6/2017 10:33:20	12.5	100.1	7.82	45363	29.32
Composite 4	B	08	9/6/2017 10:33:41	12.5	100	7.78	45158	29.18
Composite 4	C	08	9/6/2017 10:33:57	12.5	98.1	7.78	45399	29.35
Composite 4	D	08	9/6/2017 10:34:09	12.5	96.7	7.76	45402	29.35
Composite 4	E	08	9/6/2017 10:34:30	12.5	99.9	7.78	45233	29.23
Composite 5	A	08	9/6/2017 10:34:59	12.5	96	7.72	45186	29.2
Composite 5	B	08	9/6/2017 10:35:21	12.5	98.4	7.79	45433	29.37
Composite 5	C	08	9/6/2017 10:35:48	12.5	98	7.8	45502	29.42
Composite 5	D	08	9/6/2017 10:36:10	12.5	93.2	7.71	45355	29.32
Composite 5	E	08	9/6/2017 10:36:28	12.5	98.2	7.74	45300	29.28
Composite 6	A	08	9/6/2017 10:36:48	12.6	95.9	7.7	45212	29.22
Composite 6	B	08	9/6/2017 10:37:35	12.4	93.4	7.77	45375	29.33
Composite 6	C	08	9/6/2017 10:37:49	12.4	99	7.78	45284	29.26
Composite 6	D	08	9/6/2017 10:38:07	12.3	99.1	7.78	45287	29.26
Composite 6	E	08	9/6/2017 10:38:20	12.2	99.9	7.78	45203	29.2
Composite 7	A	08	9/6/2017 10:38:41	12.1	99.7	7.78	45371	29.32
Composite 7	B	08	9/6/2017 10:39:01	12.1	99.2	7.76	45211	29.2
Composite 7	C	08	9/6/2017 10:39:41	12.1	99.7	7.78	45229	29.21
Composite 7	D	08	9/6/2017 10:40:03	12.2	98.3	7.75	45234	29.22
Composite 7	E	08	9/6/2017 10:40:27	12.2	99.7	7.77	45235	29.22
Composite 8	A	08	9/6/2017 10:40:52	12.2	99.2	7.78	45268	29.25
Composite 8	B	08	9/6/2017 10:41:04	12.2	99.1	7.76	45193	29.19
Composite 8	C	08	9/6/2017 10:41:22	12.2	100	7.77	45161	29.17
Composite 8	D	08	9/6/2017 10:42:04	12.4	97.3	7.75	45252	29.24
Composite 8	E	08	9/6/2017 10:42:23	12.3	97	7.73	45233	29.22

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	09	9/7/2017 10:07:17	12.6	100.2	7.63	46745	30.32
Laboratory Control	B	09	9/7/2017 10:07:34	12.5	99.7	7.71	46616	30.23
Laboratory Control	C	09	9/7/2017 10:07:49	12.5	97	7.7	46779	30.34
Laboratory Control	D	09	9/7/2017 10:08:05	12.5	98.9	7.72	46725	30.3
Laboratory Control	E	09	9/7/2017 10:08:18	12.4	99.3	7.72	46725	30.3
CLDS Reference Site	A	09	9/7/2017 10:08:31	12.4	96.2	7.7	46715	30.29
CLDS Reference Site	B	09	9/7/2017 10:08:59	12.5	96.4	7.72	46700	30.28
CLDS Reference Site	C	09	9/7/2017 10:09:13	12.4	98.5	7.72	46738	30.31
CLDS Reference Site	D	09	9/7/2017 10:09:28	12.5	95.8	7.7	46786	30.35
CLDS Reference Site	E	09	9/7/2017 10:09:51	12.5	100.3	7.75	46717	30.3
Composite 1	A	09	9/7/2017 10:10:04	12.6	97.9	7.73	46724	30.3
Composite 1	B	09	9/7/2017 10:10:24	12.6	99.8	7.74	46790	30.35
Composite 1	C	09	9/7/2017 10:10:52	12.6	98.6	7.74	46730	30.31
Composite 1	D	09	9/7/2017 10:11:05	12.5	100.4	7.76	46676	30.27
Composite 1	E	09	9/7/2017 10:11:16	12.5	98.5	7.75	46697	30.28
Composite 2	A	09	9/7/2017 10:11:32	12.5	96.1	7.72	46740	30.31
Composite 2	B	09	9/7/2017 10:11:45	12.5	96.7	7.73	46657	30.25
Composite 2	C	09	9/7/2017 10:11:56	12.5	98	7.74	46646	30.25
Composite 2	D	09	9/7/2017 10:12:18	12.5	98.8	7.75	46694	30.28
Composite 2	E	09	9/7/2017 10:12:34	12.5	95.2	7.71	46698	30.28
Composite 3	A	09	9/7/2017 10:12:55	12.5	97	7.72	46687	30.28
Composite 3	B	09	9/7/2017 10:13:04	12.5	97.2	7.71	46724	30.3
Composite 3	C	09	9/7/2017 10:13:16	12.6	97	7.72	46713	30.3
Composite 3	D	09	9/7/2017 10:13:31	12.6	97.4	7.73	46685	30.28
Composite 3	E	09	9/7/2017 10:14:07	12.6	101.7	7.81	46727	30.31
Composite 4	A	09	9/7/2017 10:14:30	12.5	101.3	7.81	46663	30.26
Composite 4	B	09	9/7/2017 10:14:46	12.6	100.1	7.79	46699	30.29
Composite 4	C	09	9/7/2017 10:15:01	12.6	98	7.78	46658	30.26
Composite 4	D	09	9/7/2017 10:15:21	12.6	95.3	7.75	46673	30.27
Composite 4	E	09	9/7/2017 10:15:40	12.6	100.2	7.77	46707	30.29
Composite 5	A	09	9/7/2017 10:16:04	12.6	93.7	7.71	46708	30.29
Composite 5	B	09	9/7/2017 10:16:25	12.6	98.3	7.78	46691	30.28
Composite 5	C	09	9/7/2017 10:16:46	12.6	100.4	7.8	46713	30.3
Composite 5	D	09	9/7/2017 10:17:01	12.6	91.5	7.71	46674	30.27
Composite 5	E	09	9/7/2017 10:17:17	12.6	97.9	7.75	46703	30.29
Composite 6	A	09	9/7/2017 10:17:32	12.6	94.9	7.7	46666	30.26
Composite 6	B	09	9/7/2017 10:18:18	12.5	99.3	7.77	46739	30.31
Composite 6	C	09	9/7/2017 10:18:43	12.4	100.1	7.79	46699	30.28
Composite 6	D	09	9/7/2017 10:19:01	12.4	100.4	7.81	46622	30.22
Composite 6	E	09	9/7/2017 10:19:22	12.3	100.2	7.78	46733	30.3
Composite 7	A	09	9/7/2017 10:19:39	12.3	99	7.76	46745	30.31
Composite 7	B	09	9/7/2017 10:19:50	12.2	99.6	7.75	46749	30.31
Composite 7	C	09	9/7/2017 10:20:31	12.2	100.7	7.78	46788	30.33
Composite 7	D	09	9/7/2017 10:20:46	12.3	98.4	7.75	46703	30.28
Composite 7	E	09	9/7/2017 10:21:02	12.3	100.7	7.77	46741	30.31
Composite 8	A	09	9/7/2017 10:21:11	12.3	100.3	7.77	46717	30.29
Composite 8	B	09	9/7/2017 10:21:24	12.3	98.7	7.74	46760	30.32
Composite 8	C	09	9/7/2017 10:21:46	12.3	100.8	7.78	46735	30.3
Composite 8	D	09	9/7/2017 10:22:19	12.5	97.5	7.75	46700	30.28
Composite 8	E	09	9/7/2017 10:22:35	12.4	96.4	7.73	46706	30.28

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	10	9/8/2017 09:12:12	12.5	99.6	7.86	44790	28.91
Laboratory Control	B	10	9/8/2017 09:12:33	12.4	98.6	7.82	44669	28.82
Laboratory Control	C	10	9/8/2017 09:13:01	12.4	96.2	7.78	44733	28.87
Laboratory Control	D	10	9/8/2017 09:13:21	12.4	97.7	7.78	44743	28.88
Laboratory Control	E	10	9/8/2017 09:13:43	12.4	98	7.78	44770	28.89
CLDS Reference Site	A	10	9/8/2017 09:14:01	12.4	95.4	7.77	44756	28.88
CLDS Reference Site	B	10	9/8/2017 09:14:23	12.4	96	7.76	44830	28.94
CLDS Reference Site	C	10	9/8/2017 09:14:37	12.4	97.6	7.77	44724	28.86
CLDS Reference Site	D	10	9/8/2017 09:14:54	12.4	96.3	7.77	44690	28.84
CLDS Reference Site	E	10	9/8/2017 09:15:09	12.5	99	7.79	44942	29.02
Composite 1	A	10	9/8/2017 09:15:26	12.6	97.1	7.78	44968	29.04
Composite 1	B	10	9/8/2017 09:15:45	12.6	99.1	7.8	44690	28.84
Composite 1	C	10	9/8/2017 09:16:13	12.5	98.4	7.79	44778	28.9
Composite 1	D	10	9/8/2017 09:16:29	12.4	99.7	7.8	44868	28.97
Composite 1	E	10	9/8/2017 09:16:44	12.4	98.3	7.79	44778	28.9
Composite 2	A	10	9/8/2017 09:17:07	12.4	94.9	7.76	44755	28.88
Composite 2	B	10	9/8/2017 09:18:00	12.4	94	7.77	44866	28.96
Composite 2	C	10	9/8/2017 09:18:15	12.4	98.2	7.78	44796	28.92
Composite 2	D	10	9/8/2017 09:18:41	12.4	98.9	7.79	44801	28.92
Composite 2	E	10	9/8/2017 09:19:04	12.4	95.5	7.75	44741	28.88
Composite 3	A	10	9/8/2017 09:19:26	12.4	96.9	7.75	44805	28.92
Composite 3	B	10	9/8/2017 09:19:44	12.4	96.8	7.75	44750	28.88
Composite 3	C	10	9/8/2017 09:20:01	12.5	96.8	7.75	44812	28.93
Composite 3	D	10	9/8/2017 09:20:23	12.6	96.6	7.77	44983	29.05
Composite 3	E	10	9/8/2017 09:20:49	12.5	101.7	7.84	44946	29.02
Composite 4	A	10	9/8/2017 09:21:06	12.5	100.7	7.84	44787	28.91
Composite 4	B	10	9/8/2017 09:21:28	12.4	100.4	7.82	44781	28.9
Composite 4	C	10	9/8/2017 09:21:45	12.5	98.2	7.82	45061	29.11
Composite 4	D	10	9/8/2017 09:22:06	12.6	88.9	7.75	45186	29.2
Composite 4	E	10	9/8/2017 09:22:26	12.5	99.8	7.81	44878	28.98
Composite 5	A	10	9/8/2017 09:22:53	12.5	93.6	7.75	44840	28.95
Composite 5	B	10	9/8/2017 09:23:08	12.5	97.8	7.78	44982	29.05
Composite 5	C	10	9/8/2017 09:23:29	12.5	100.4	7.83	44945	29.03
Composite 5	D	10	9/8/2017 09:23:51	12.5	91.4	7.74	44939	29.02
Composite 5	E	10	9/8/2017 09:24:10	12.5	97.4	7.76	44773	28.9
Composite 6	A	10	9/8/2017 09:24:30	12.6	94.2	7.72	44994	29.06
Composite 6	B	10	9/8/2017 09:25:20	12.4	99.8	7.78	44822	28.93
Composite 6	C	10	9/8/2017 09:25:46	12.4	100.3	7.81	44965	29.04
Composite 6	D	10	9/8/2017 09:26:01	12.4	100.1	7.83	45028	29.08
Composite 6	E	10	9/8/2017 09:26:22	12.3	99.6	7.81	44752	28.88
Composite 7	A	10	9/8/2017 09:26:38	12.2	98.5	7.79	44838	28.94
Composite 7	B	10	9/8/2017 09:26:54	12.2	100	7.8	44824	28.93
Composite 7	C	10	9/8/2017 09:27:44	12.2	101.1	7.82	44860	28.95
Composite 7	D	10	9/8/2017 09:28:03	12.3	98.4	7.79	45059	29.1
Composite 7	E	10	9/8/2017 09:28:25	12.3	100.3	7.81	44799	28.91
Composite 8	A	10	9/8/2017 09:28:47	12.3	100.3	7.83	44905	28.99
Composite 8	B	10	9/8/2017 09:29:04	12.3	99.2	7.8	44723	28.86
Composite 8	C	10	9/8/2017 09:29:26	12.3	101.1	7.83	44964	29.03
Composite 8	D	10	9/8/2017 09:30:01	12.4	98	7.79	44870	28.97
Composite 8	E	10	9/8/2017 09:30:30	12.4	95.2	7.75	44847	28.95

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	11	9/9/2017 10:06:52	12.7	97.2	7.76	45068	29.12
Laboratory Control	B	11	9/9/2017 10:07:08	12.6	97	7.75	45080	29.13
Laboratory Control	C	11	9/9/2017 10:07:25	12.6	95	7.73	45072	29.12
Laboratory Control	D	11	9/9/2017 10:07:46	12.6	96.6	7.74	45081	29.12
Laboratory Control	E	11	9/9/2017 10:08:02	12.5	97.4	7.74	45073	29.12
CLDS Reference Site	A	11	9/9/2017 10:08:19	12.5	94.9	7.72	45080	29.12
CLDS Reference Site	B	11	9/9/2017 10:08:41	12.5	95.6	7.73	45083	29.12
CLDS Reference Site	C	11	9/9/2017 10:08:58	12.5	98	7.74	45085	29.13
CLDS Reference Site	D	11	9/9/2017 10:09:14	12.6	96.9	7.73	45097	29.14
CLDS Reference Site	E	11	9/9/2017 10:09:30	12.6	98.3	7.76	45120	29.15
Composite 1	A	11	9/9/2017 10:09:55	12.6	96.5	7.76	45136	29.17
Composite 1	B	11	9/9/2017 10:10:13	12.7	98.9	7.77	45082	29.13
Composite 1	C	11	9/9/2017 10:10:43	12.6	98.6	7.76	45076	29.12
Composite 1	D	11	9/9/2017 10:11:08	12.6	98.6	7.78	45072	29.12
Composite 1	E	11	9/9/2017 10:11:29	12.6	97.1	7.76	45076	29.12
Composite 2	A	11	9/9/2017 10:11:42	12.6	95.7	7.74	45090	29.13
Composite 2	B	11	9/9/2017 10:12:16	12.5	93.5	7.74	45080	29.12
Composite 2	C	11	9/9/2017 10:12:38	12.6	96.7	7.75	45079	29.12
Composite 2	D	11	9/9/2017 10:13:06	12.6	97.9	7.78	45079	29.12
Composite 2	E	11	9/9/2017 10:13:29	12.6	94.8	7.73	45086	29.13
Composite 3	A	11	9/9/2017 10:13:48	12.6	95.5	7.73	45079	29.12
Composite 3	B	11	9/9/2017 10:14:12	12.6	95.9	7.73	45084	29.13
Composite 3	C	11	9/9/2017 10:14:28	12.6	96.8	7.73	45090	29.13
Composite 3	D	11	9/9/2017 10:14:45	12.6	96	7.74	45182	29.2
Composite 3	E	11	9/9/2017 10:15:11	12.6	101.3	7.83	45130	29.16
Composite 4	A	11	9/9/2017 10:15:28	12.6	99.9	7.83	45063	29.11
Composite 4	B	11	9/9/2017 10:16:09	12.6	96.1	7.79	45196	29.21
Composite 4	C	11	9/9/2017 10:16:24	12.6	93.3	7.76	43635	28.09
Composite 4	D	11	9/9/2017 10:16:34	12.6	90.6	7.73	45314	29.29
Composite 4	E	11	9/9/2017 10:16:55	12.6	99	7.79	45085	29.13
Composite 5	A	11	9/9/2017 10:17:27	12.6	93.1	7.72	45106	29.14
Composite 5	B	11	9/9/2017 10:17:48	12.6	97.7	7.77	45135	29.16
Composite 5	C	11	9/9/2017 10:18:05	12.6	100.2	7.8	45131	29.16
Composite 5	D	11	9/9/2017 10:18:22	12.6	91.7	7.73	45122	29.16
Composite 5	E	11	9/9/2017 10:18:45	12.6	97.6	7.74	45094	29.14
Composite 6	A	11	9/9/2017 10:19:03	12.7	92.5	7.7	45158	29.18
Composite 6	B	11	9/9/2017 10:19:59	12.5	97.3	7.76	45105	29.14
Composite 6	C	11	9/9/2017 10:20:16	12.5	99.2	7.79	45151	29.17
Composite 6	D	11	9/9/2017 10:20:29	12.4	99.9	7.81	45215	29.22
Composite 6	E	11	9/9/2017 10:20:50	12.4	99.7	7.79	45111	29.14
Composite 7	A	11	9/9/2017 10:21:06	12.3	98.6	7.77	45117	29.14
Composite 7	B	11	9/9/2017 10:21:27	12.2	99.8	7.78	45130	29.15
Composite 7	C	11	9/9/2017 10:22:22	12.2	100	7.8	45138	29.15
Composite 7	D	11	9/9/2017 10:22:49	12.3	97.5	7.77	45205	29.2
Composite 7	E	11	9/9/2017 10:23:03	12.4	99.2	7.79	45099	29.13
Composite 8	A	11	9/9/2017 10:23:19	12.3	98.6	7.81	45136	29.16
Composite 8	B	11	9/9/2017 10:23:37	12.4	98.5	7.78	45112	29.14
Composite 8	C	11	9/9/2017 10:24:00	12.3	100.3	7.83	45165	29.17
Composite 8	D	11	9/9/2017 10:24:36	12.5	96.6	7.79	45108	29.14
Composite 8	E	11	9/9/2017 10:24:54	12.4	95.4	7.75	45115	29.14

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	12	9/10/2017 11:03:16	12.8	103.8	7.7	46075	29.84
Laboratory Control	B	12	9/10/2017 11:03:28	12.7	104.2	7.7	46051	29.83
Laboratory Control	C	12	9/10/2017 11:03:39	12.7	103.4	7.7	46087	29.85
Laboratory Control	D	12	9/10/2017 11:03:51	12.7	103.2	7.7	46071	29.84
Laboratory Control	E	12	9/10/2017 11:04:07	12.6	103.6	7.71	46072	29.84
CLDS Reference Site	A	12	9/10/2017 11:04:24	12.6	102.6	7.71	46067	29.83
CLDS Reference Site	B	12	9/10/2017 11:05:30	12.6	99.9	7.72	46120	29.87
CLDS Reference Site	C	12	9/10/2017 11:05:50	12.6	102.3	7.73	46079	29.84
CLDS Reference Site	D	12	9/10/2017 11:06:12	12.7	102	7.72	46065	29.83
CLDS Reference Site	E	12	9/10/2017 11:06:26	12.6	101.8	7.75	46184	29.92
Composite 1	A	12	9/10/2017 11:06:46	12.7	101.4	7.78	46180	29.92
Composite 1	B	12	9/10/2017 11:07:00	12.8	101.9	7.77	46091	29.86
Composite 1	C	12	9/10/2017 11:07:48	12.7	100.6	7.77	46111	29.87
Composite 1	D	12	9/10/2017 11:08:00	12.6	101.6	7.78	46123	29.87
Composite 1	E	12	9/10/2017 11:08:15	12.7	101.3	7.76	46071	29.84
Composite 2	A	12	9/10/2017 11:08:29	12.7	98.9	7.74	46078	29.84
Composite 2	B	12	9/10/2017 11:08:44	12.6	98.5	7.74	46135	29.88
Composite 2	C	12	9/10/2017 11:08:57	12.7	99.9	7.76	46101	29.86
Composite 2	D	12	9/10/2017 11:09:33	12.6	100.4	7.77	46119	29.87
Composite 2	E	12	9/10/2017 11:09:53	12.7	98.2	7.75	46076	29.84
Composite 3	A	12	9/10/2017 11:10:07	12.7	98.4	7.74	46100	29.86
Composite 3	B	12	9/10/2017 11:10:20	12.7	99.1	7.74	46077	29.84
Composite 3	C	12	9/10/2017 11:10:35	12.7	98.9	7.74	46105	29.86
Composite 3	D	12	9/10/2017 11:10:51	12.6	97.7	7.74	46277	29.99
Composite 3	E	12	9/10/2017 11:13:56	12.6	102.4	7.85	46135	29.88
Composite 4	A	12	9/10/2017 11:14:14	12.7	100.8	7.83	46108	29.86
Composite 4	B	12	9/10/2017 11:14:37	12.7	100.9	7.81	46094	29.86
Composite 4	C	12	9/10/2017 11:14:53	12.6	99.2	7.8	46231	29.95
Composite 4	D	12	9/10/2017 11:15:12	12.6	95.9	7.77	46262	29.97
Composite 4	E	12	9/10/2017 11:15:27	12.7	99.9	7.8	46117	29.87
Composite 5	A	12	9/10/2017 11:16:09	12.7	96.9	7.73	46095	29.86
Composite 5	B	12	9/10/2017 11:16:30	12.6	98.6	7.77	46189	29.92
Composite 5	C	12	9/10/2017 11:16:41	12.6	99.9	7.79	46164	29.9
Composite 5	D	12	9/10/2017 11:16:58	12.7	98.1	7.77	46167	29.91
Composite 5	E	12	9/10/2017 11:17:07	12.7	98.8	7.77	46111	29.87
Composite 6	A	12	9/10/2017 11:17:22	12.7	95.6	7.72	46177	29.92
Composite 6	B	12	9/10/2017 11:18:28	12.6	99.6	7.79	46205	29.93
Composite 6	C	12	9/10/2017 11:18:46	12.5	100.4	7.8	46196	29.92
Composite 6	D	12	9/10/2017 11:18:58	12.5	100.1	7.82	46326	30.01
Composite 6	E	12	9/10/2017 11:19:12	12.5	100.5	7.8	46123	29.87
Composite 7	A	12	9/10/2017 11:19:31	12.4	99.9	7.77	46133	29.87
Composite 7	B	12	9/10/2017 11:19:41	12.3	100.4	7.78	46160	29.89
Composite 7	C	12	9/10/2017 11:20:29	12.3	100.1	7.81	46165	29.89
Composite 7	D	12	9/10/2017 11:20:49	12.3	99	7.78	46252	29.96
Composite 7	E	12	9/10/2017 11:21:03	12.3	100.6	7.82	46236	29.94
Composite 8	A	12	9/10/2017 11:21:15	12.5	100.3	7.81	46113	29.86
Composite 8	B	12	9/10/2017 11:21:23	12.4	100.3	7.8	46158	29.89
Composite 8	C	12	9/10/2017 11:21:34	12.4	100.9	7.81	46114	29.86
Composite 8	D	12	9/10/2017 11:22:38	12.5	98.3	7.8	46172	29.91
Composite 8	E	12	9/10/2017 11:22:51	12.5	97.6	7.76	46113	29.86

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	13	9/11/2017 10:04:42	12.6	105.3	7.74	44991	29.06
Laboratory Control	B	13	9/11/2017 10:05:06	12.6	103.1	7.75	45028	29.09
Laboratory Control	C	13	9/11/2017 10:05:19	12.6	101.3	7.74	45042	29.1
Laboratory Control	D	13	9/11/2017 10:05:35	12.5	101.3	7.74	45060	29.11
Laboratory Control	E	13	9/11/2017 10:05:45	12.5	101.4	7.74	45046	29.1
CLDS Reference Site	A	13	9/11/2017 10:05:58	12.5	100.4	7.74	45023	29.08
CLDS Reference Site	B	13	9/11/2017 10:06:42	12.5	99.4	7.75	45029	29.08
CLDS Reference Site	C	13	9/11/2017 10:06:54	12.5	99.9	7.75	45074	29.12
CLDS Reference Site	D	13	9/11/2017 10:07:11	12.5	99.6	7.76	45262	29.25
CLDS Reference Site	E	13	9/11/2017 10:07:23	12.6	100.2	7.78	45270	29.26
Composite 1	A	13	9/11/2017 10:07:38	12.7	100.3	7.8	45363	29.33
Composite 1	B	13	9/11/2017 10:07:57	12.7	100.4	7.79	45030	29.09
Composite 1	C	13	9/11/2017 10:08:45	12.6	99.1	7.79	45093	29.13
Composite 1	D	13	9/11/2017 10:09:07	12.6	99.6	7.81	45168	29.19
Composite 1	E	13	9/11/2017 10:09:21	12.6	98.6	7.79	45018	29.08
Composite 2	A	13	9/11/2017 10:09:35	12.5	97.3	7.77	44967	29.04
Composite 2	B	13	9/11/2017 10:09:44	12.6	97	7.77	45160	29.18
Composite 2	C	13	9/11/2017 10:09:54	12.6	97.9	7.78	45128	29.16
Composite 2	D	13	9/11/2017 10:10:24	12.6	98	7.79	45083	29.13
Composite 2	E	13	9/11/2017 10:10:48	12.6	95.3	7.76	45075	29.12
Composite 3	A	13	9/11/2017 10:11:08	12.6	96.3	7.76	45089	29.13
Composite 3	B	13	9/11/2017 10:11:31	12.6	96.6	7.75	44977	29.05
Composite 3	C	13	9/11/2017 10:11:52	12.6	96.9	7.76	45076	29.12
Composite 3	D	13	9/11/2017 10:12:08	12.6	97.4	7.77	45213	29.22
Composite 3	E	13	9/11/2017 10:13:32	12.6	100.3	7.87	45247	29.24
Composite 4	A	13	9/11/2017 10:13:50	12.6	99.7	7.86	45229	29.23
Composite 4	B	13	9/11/2017 10:14:16	12.6	99	7.83	45098	29.14
Composite 4	C	13	9/11/2017 10:14:39	12.6	96.7	7.82	45375	29.34
Composite 4	D	13	9/11/2017 10:14:55	12.6	96.6	7.79	45314	29.29
Composite 4	E	13	9/11/2017 10:15:21	12.6	99.1	7.82	45137	29.17
Composite 5	A	13	9/11/2017 10:16:36	12.6	93.7	7.74	45046	29.1
Composite 5	B	13	9/11/2017 10:17:00	12.6	97	7.78	45285	29.27
Composite 5	C	13	9/11/2017 10:17:10	12.6	98.2	7.8	45221	29.23
Composite 5	D	13	9/11/2017 10:17:25	12.6	96.9	7.79	45237	29.24
Composite 5	E	13	9/11/2017 10:17:45	12.6	97.2	7.79	45083	29.13
Composite 6	A	13	9/11/2017 10:18:01	12.7	93.4	7.74	45291	29.28
Composite 6	B	13	9/11/2017 10:19:11	12.5	98.3	7.81	45223	29.23
Composite 6	C	13	9/11/2017 10:19:27	12.5	98.6	7.81	45276	29.26
Composite 6	D	13	9/11/2017 10:19:38	12.5	98.6	7.81	45174	29.19
Composite 6	E	13	9/11/2017 10:19:47	12.4	98.9	7.81	45109	29.14
Composite 7	A	13	9/11/2017 10:19:57	12.3	98.4	7.79	45111	29.14
Composite 7	B	13	9/11/2017 10:20:09	12.3	98.5	7.8	45098	29.12
Composite 7	C	13	9/11/2017 10:20:48	12.3	98.8	7.81	45073	29.11
Composite 7	D	13	9/11/2017 10:21:03	12.4	97.2	7.78	45124	29.15
Composite 7	E	13	9/11/2017 10:21:17	12.4	98.8	7.81	45193	29.2
Composite 8	A	13	9/11/2017 10:21:33	12.4	98.7	7.82	45097	29.13
Composite 8	B	13	9/11/2017 10:21:43	12.3	98.8	7.81	45103	29.13
Composite 8	C	13	9/11/2017 10:21:54	12.3	99	7.82	45301	29.27
Composite 8	D	13	9/11/2017 10:22:56	12.5	96.2	7.81	45283	29.27
Composite 8	E	13	9/11/2017 10:23:12	12.5	95.1	7.77	45100	29.13

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	14	9/12/2017 08:58:44	12.6	114.3	7.76	44845	28.96
Laboratory Control	B	14	9/12/2017 08:59:09	12.5	109.6	7.77	44863	28.97
Laboratory Control	C	14	9/12/2017 08:59:47	12.5	104.7	7.76	44838	28.95
Laboratory Control	D	14	9/12/2017 09:00:08	12.5	104.8	7.77	44854	28.96
Laboratory Control	E	14	9/12/2017 09:00:28	12.4	105.2	7.78	44822	28.93
CLDS Reference Site	A	14	9/12/2017 09:00:46	12.5	102	7.78	44852	28.96
CLDS Reference Site	B	14	9/12/2017 09:01:07	12.5	102.2	7.78	44812	28.93
CLDS Reference Site	C	14	9/12/2017 09:01:30	12.5	103	7.8	44878	28.98
CLDS Reference Site	D	14	9/12/2017 09:01:48	12.5	102	7.79	44736	28.87
CLDS Reference Site	E	14	9/12/2017 09:02:11	12.5	103.2	7.8	44722	28.87
Composite 1	A	14	9/12/2017 09:02:42	12.6	102.9	7.82	44681	28.84
Composite 1	B	14	9/12/2017 09:03:02	12.6	103.2	7.82	44878	28.98
Composite 1	C	14	9/12/2017 09:03:32	12.6	101.2	7.82	44795	28.92
Composite 1	D	14	9/12/2017 09:03:51	12.5	101.5	7.82	44802	28.92
Composite 1	E	14	9/12/2017 09:04:06	12.5	100.7	7.82	44821	28.94
Composite 2	A	14	9/12/2017 09:04:25	12.5	98.1	7.8	44906	29
Composite 2	B	14	9/12/2017 09:04:44	12.5	99.6	7.8	44758	28.89
Composite 2	C	14	9/12/2017 09:05:08	12.5	100.8	7.82	44834	28.95
Composite 2	D	14	9/12/2017 09:05:31	12.5	100.8	7.82	44798	28.92
Composite 2	E	14	9/12/2017 09:05:49	12.5	97.4	7.81	44804	28.92
Composite 3	A	14	9/12/2017 09:06:11	12.5	99	7.8	44813	28.93
Composite 3	B	14	9/12/2017 09:06:29	12.5	98.3	7.8	44900	28.99
Composite 3	C	14	9/12/2017 09:06:48	12.6	98.9	7.8	44807	28.93
Composite 3	D	14	9/12/2017 09:07:18	12.6	98.1	7.8	44836	28.95
Composite 3	E	14	9/12/2017 09:07:50	12.6	102.5	7.85	44814	28.93
Composite 4	A	14	9/12/2017 09:08:08	12.6	101.6	7.85	44754	28.89
Composite 4	B	14	9/12/2017 09:08:28	12.6	100.8	7.84	44786	28.91
Composite 4	C	14	9/12/2017 09:08:44	12.6	99	7.84	44714	28.86
Composite 4	D	14	9/12/2017 09:09:03	12.6	93.8	7.78	44704	28.86
Composite 4	E	14	9/12/2017 09:09:22	12.6	90.8	7.77	44787	28.91
Composite 5	A	14	9/12/2017 09:09:56	12.6	96.2	7.78	44881	28.98
Composite 5	B	14	9/12/2017 09:10:10	12.6	98.3	7.79	44759	28.89
Composite 5	C	14	9/12/2017 09:10:26	12.6	100.6	7.82	44694	28.85
Composite 5	D	14	9/12/2017 09:10:44	12.6	99.1	7.81	44734	28.88
Composite 5	E	14	9/12/2017 09:11:06	12.6	99.5	7.81	44866	28.97
Composite 6	A	14	9/12/2017 09:11:27	12.6	96.5	7.76	44741	28.88
Composite 6	B	14	9/12/2017 09:12:47	12.5	101.3	7.81	44865	28.97
Composite 6	C	14	9/12/2017 09:13:07	12.5	99.7	7.81	44796	28.92
Composite 6	D	14	9/12/2017 09:13:29	12.4	101.5	7.82	44863	28.96
Composite 6	E	14	9/12/2017 09:13:53	12.4	100.9	7.82	44828	28.94
Composite 7	A	14	9/12/2017 09:14:19	12.3	100.9	7.81	44870	28.96
Composite 7	B	14	9/12/2017 09:14:30	12.3	101.2	7.81	44916	29
Composite 7	C	14	9/12/2017 09:15:29	12.3	101.6	7.82	44904	28.99
Composite 7	D	14	9/12/2017 09:15:52	12.3	100	7.8	44816	28.93
Composite 7	E	14	9/12/2017 09:16:15	12.4	101.6	7.83	44813	28.92
Composite 8	A	14	9/12/2017 09:16:35	12.4	101.2	7.84	44857	28.96
Composite 8	B	14	9/12/2017 09:16:51	12.4	100.2	7.82	44855	28.96
Composite 8	C	14	9/12/2017 09:17:08	12.3	102.1	7.83	44784	28.9
Composite 8	D	14	9/12/2017 09:17:46	12.5	97.9	7.82	44830	28.94
Composite 8	E	14	9/12/2017 09:18:08	12.5	97	7.8	44896	28.99

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	15	9/13/2017 09:07:13	12.7		7.83	46228	29.95
Laboratory Control	B	15	9/13/2017 09:07:26	12.6		7.83	46243	29.96
Laboratory Control	C	15	9/13/2017 09:07:41	12.6		7.82	46247	29.96
Laboratory Control	D	15	9/13/2017 09:07:54	12.6		7.82	46256	29.97
Laboratory Control	E	15	9/13/2017 09:08:05	12.5		7.83	46250	29.96
CLDS Reference Site	A	15	9/13/2017 09:08:25	12.5		7.84	46252	29.96
CLDS Reference Site	B	15	9/13/2017 09:09:16	12.5		7.84	46214	29.94
CLDS Reference Site	C	15	9/13/2017 09:09:35	12.5		7.85	46268	29.98
CLDS Reference Site	D	15	9/13/2017 09:09:57	12.5		7.84	46117	29.87
CLDS Reference Site	E	15	9/13/2017 09:10:08	12.6		7.85	46064	29.83
Composite 1	A	15	9/13/2017 09:10:22	12.6		7.86	45946	29.75
Composite 1	B	15	9/13/2017 09:10:39	12.7		7.87	46286	29.99
Composite 1	C	15	9/13/2017 09:11:08	12.6		7.86	46237	29.96
Composite 1	D	15	9/13/2017 09:11:21	12.6		7.87	46234	29.95
Composite 1	E	15	9/13/2017 09:11:34	12.6		7.87	46232	29.95
Composite 2	A	15	9/13/2017 09:11:45	12.6		7.86	46278	29.98
Composite 2	B	15	9/13/2017 09:12:01	12.6		7.86	46162	29.9
Composite 2	C	15	9/13/2017 09:12:19	12.6		7.87	46244	29.96
Composite 2	D	15	9/13/2017 09:13:22	12.6		7.87	46218	29.94
Composite 2	E	15	9/13/2017 09:13:48	12.6		7.86	46238	29.96
Composite 3	A	15	9/13/2017 09:14:08	12.6		7.85	46217	29.94
Composite 3	B	15	9/13/2017 09:14:23	12.6		7.85	46291	29.99
Composite 3	C	15	9/13/2017 09:14:34	12.6		7.85	46215	29.94
Composite 3	D	15	9/13/2017 09:14:53	12.6		7.83	46192	29.92
Composite 3	E	15	9/13/2017 09:17:01	12.6		7.91	46241	29.96
Composite 4	A	15	9/13/2017 09:17:19	12.6		7.9	46149	29.89
Composite 4	B	15	9/13/2017 09:17:40	12.6		7.89	46203	29.93
Composite 4	C	15	9/13/2017 09:17:59	12.6		7.87	46031	29.81
Composite 4	D	15	9/13/2017 09:18:15	12.6		7.84	46029	29.81
Composite 4	E	15	9/13/2017 09:18:34	12.6		7.82	46234	29.95
Composite 5	A	15	9/13/2017 09:25:11	12.6		7.84	46311	30.01
Composite 5	B	15	9/13/2017 09:25:31	12.6		7.85	46107	29.86
Composite 5	C	15	9/13/2017 09:25:49	12.6		7.86	46090	29.85
Composite 5	D	15	9/13/2017 09:26:07	12.6		7.86	46157	29.9
Composite 5	E	15	9/13/2017 09:26:24	12.6		7.86	46302	30
Composite 6	A	15	9/13/2017 09:26:51	12.7		7.79	46144	29.89
Composite 6	B	15	9/13/2017 09:28:01	12.5		7.85	46309	30.01
Composite 6	C	15	9/13/2017 09:28:20	12.5		7.85	46217	29.94
Composite 6	D	15	9/13/2017 09:28:49	12.5		7.85	46297	29.99
Composite 6	E	15	9/13/2017 09:29:07	12.4		7.85	46295	29.99
Composite 7	A	15	9/13/2017 09:29:20	12.4		7.85	46352	30.03
Composite 7	B	15	9/13/2017 09:29:40	12.3		7.85	46305	29.99
Composite 7	C	15	9/13/2017 09:30:33	12.3		7.86	46328	30.01
Composite 7	D	15	9/13/2017 09:30:57	12.4		7.84	46252	29.96
Composite 7	E	15	9/13/2017 09:31:14	12.4		7.86	46259	29.96
Composite 8	A	15	9/13/2017 09:31:29	12.4		7.87	46280	29.98
Composite 8	B	15	9/13/2017 09:31:48	12.4		7.86	46317	30.01
Composite 8	C	15	9/13/2017 09:32:00	12.4		7.87	46310	30
Composite 8	D	15	9/13/2017 09:33:09	12.5		7.87	46250	29.96
Composite 8	E	15	9/13/2017 09:33:30	12.5		7.86	46309	30

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	16	9/14/2017 09:30:22	12.6	97.5	7.81	45946	29.75
Laboratory Control	B	16	9/14/2017 09:30:44	12.5	97.4	7.82	45910	29.72
Laboratory Control	C	16	9/14/2017 09:31:10	12.5	94.9	7.8	45951	29.74
Laboratory Control	D	16	9/14/2017 09:31:28	12.4	97	7.81	45960	29.75
Laboratory Control	E	16	9/14/2017 09:31:43	12.4	96.9	7.81	45965	29.75
CLDS Reference Site	A	16	9/14/2017 09:32:09	12.4	95	7.82	45950	29.74
CLDS Reference Site	B	16	9/14/2017 09:32:25	12.4	95.6	7.82	45933	29.73
CLDS Reference Site	C	16	9/14/2017 09:32:52	12.4	97.7	7.83	45962	29.75
CLDS Reference Site	D	16	9/14/2017 09:33:07	12.4	97.2	7.83	45931	29.73
CLDS Reference Site	E	16	9/14/2017 09:33:21	12.5	98.8	7.83	45886	29.7
Composite 1	A	16	9/14/2017 09:33:40	12.5	99.8	7.84	45841	29.67
Composite 1	B	16	9/14/2017 09:33:55	12.6	99.6	7.85	45960	29.75
Composite 1	C	16	9/14/2017 09:34:23	12.6	98	7.84	45952	29.75
Composite 1	D	16	9/14/2017 09:34:42	12.5	99.5	7.85	45958	29.75
Composite 1	E	16	9/14/2017 09:35:04	12.5	97.6	7.85	45967	29.76
Composite 2	A	16	9/14/2017 09:35:21	12.5	94.9	7.84	45969	29.76
Composite 2	B	16	9/14/2017 09:35:42	12.5	96.2	7.83	45939	29.74
Composite 2	C	16	9/14/2017 09:36:00	12.5	97.7	7.85	45950	29.74
Composite 2	D	16	9/14/2017 09:36:25	12.5	98.3	7.85	45972	29.76
Composite 2	E	16	9/14/2017 09:36:43	12.5	95.1	7.84	45955	29.75
Composite 3	A	16	9/14/2017 09:36:59	12.5	96.3	7.84	45960	29.75
Composite 3	B	16	9/14/2017 09:37:15	12.5	95.7	7.83	45949	29.75
Composite 3	C	16	9/14/2017 09:37:33	12.5	97.5	7.83	45954	29.75
Composite 3	D	16	9/14/2017 09:37:49	12.5	96.4	7.83	45987	29.77
Composite 3	E	16	9/14/2017 09:38:17	12.5	101.6	7.88	45968	29.76
Composite 4	A	16	9/14/2017 09:38:40	12.6	100.3	7.88	45935	29.74
Composite 4	B	16	9/14/2017 09:38:56	12.6	100	7.88	45917	29.72
Composite 4	C	16	9/14/2017 09:39:16	12.6	96.9	7.87	45803	29.64
Composite 4	D	16	9/14/2017 09:39:38	12.6	94.3	7.84	45895	29.71
Composite 4	E	16	9/14/2017 09:39:53	12.5	88.8	7.82	45961	29.75
Composite 5	A	16	9/14/2017 09:40:25	12.5	93.8	7.83	45989	29.77
Composite 5	B	16	9/14/2017 09:40:41	12.5	97.3	7.83	45899	29.71
Composite 5	C	16	9/14/2017 09:40:56	12.5	99.6	7.86	45915	29.72
Composite 5	D	16	9/14/2017 09:41:24	12.5	97.1	7.84	45946	29.74
Composite 5	E	16	9/14/2017 09:41:45	12.5	97.6	7.85	45990	29.78
Composite 6	A	16	9/14/2017 09:41:55	12.6	95.1	7.81	45955	29.75
Composite 6	B	16	9/14/2017 09:42:32	12.4	99.4	7.83	46009	29.78
Composite 6	C	16	9/14/2017 09:43:04	12.4	99.8	7.84	45920	29.72
Composite 6	D	16	9/14/2017 09:43:25	12.3	99.4	7.85	45991	29.77
Composite 6	E	16	9/14/2017 09:43:42	12.2	99.7	7.85	46001	29.77
Composite 7	A	16	9/14/2017 09:44:01	12.2	98	7.84	46020	29.78
Composite 7	B	16	9/14/2017 09:44:18	12.1	99.5	7.84	46015	29.77
Composite 7	C	16	9/14/2017 09:44:48	12.1	100.2	7.85	46024	29.78
Composite 7	D	16	9/14/2017 09:45:13	12.2	97.4	7.83	46008	29.78
Composite 7	E	16	9/14/2017 09:45:32	12.3	99.9	7.85	45991	29.77
Composite 8	A	16	9/14/2017 09:45:51	12.2	100.5	7.86	45993	29.77
Composite 8	B	16	9/14/2017 09:46:22	12.2	98.1	7.85	46029	29.79
Composite 8	C	16	9/14/2017 09:46:39	12.2	100.6	7.87	46018	29.78
Composite 8	D	16	9/14/2017 09:47:32	12.4	96.1	7.86	46012	29.79
Composite 8	E	16	9/14/2017 09:47:48	12.3	94.2	7.84	46007	29.78

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	17	9/15/2017 07:31:30	13.7	96.4	7.55	45106	29.18
Laboratory Control	B	17	9/15/2017 07:31:54	13.7	94.8	7.57	45021	29.12
Laboratory Control	C	17	9/15/2017 07:32:18	13.6	91.5	7.58	45088	29.16
Laboratory Control	D	17	9/15/2017 07:32:33	13.5	91.9	7.58	45070	29.15
Laboratory Control	E	17	9/15/2017 07:32:59	13.4	92.4	7.6	45109	29.17
CLDS Reference Site	A	17	9/15/2017 07:33:21	13.3	90.3	7.61	45077	29.15
CLDS Reference Site	B	17	9/15/2017 07:34:06	13	91.8	7.62	45229	29.25
CLDS Reference Site	C	17	9/15/2017 07:34:29	13.3	91.3	7.63	45070	29.14
CLDS Reference Site	D	17	9/15/2017 07:34:50	12.9	92.1	7.64	45249	29.26
CLDS Reference Site	E	17	9/15/2017 07:35:18	12.8	94.3	7.68	45357	29.33
Composite 1	A	17	9/15/2017 07:35:57	12.8	94.8	7.7	45373	29.34
Composite 1	B	17	9/15/2017 07:36:29	13.2	93.9	7.69	45096	29.16
Composite 1	C	17	9/15/2017 07:37:00	13.4	92.4	7.68	45196	29.24
Composite 1	D	17	9/15/2017 07:37:19	13.5	93.9	7.7	45140	29.2
Composite 1	E	17	9/15/2017 07:37:38	13.5	92.1	7.69	45151	29.21
Composite 2	A	17	9/15/2017 07:38:05	13.8	88.5	7.66	45051	29.14
Composite 2	B	17	9/15/2017 07:38:31	13.3	90.6	7.68	45251	29.27
Composite 2	C	17	9/15/2017 07:39:55	13.5	91.3	7.7	45136	29.19
Composite 2	D	17	9/15/2017 07:40:19	13.2	92.9	7.71	45255	29.27
Composite 2	E	17	9/15/2017 07:40:44	13.4	88.2	7.69	45138	29.19
Composite 3	A	17	9/15/2017 07:41:09	13.4	90.4	7.68	45124	29.18
Composite 3	B	17	9/15/2017 07:41:42	13	89.8	7.68	45338	29.32
Composite 3	C	17	9/15/2017 07:42:08	13.1	92.3	7.69	45247	29.26
Composite 3	D	17	9/15/2017 07:42:34	13.2	90.1	7.68	45153	29.2
Composite 3	E	17	9/15/2017 07:43:07	13.6	94.2	7.73	45077	29.15
Composite 4	A	17	9/15/2017 07:43:33	13.3	94.7	7.75	45229	29.26
Composite 4	B	17	9/15/2017 07:43:56	13.2	93.4	7.76	45272	29.28
Composite 4	C	17	9/15/2017 07:44:18	13	91.2	7.76	45342	29.33
Composite 4	D	17	9/15/2017 07:45:09	13.2	89.7	7.7	45274	29.28
Composite 4	E	17	9/15/2017 07:57:38	13.3	70	7.58	45372	29.36
Composite 5	A	17	9/15/2017 07:58:24	13.5	86.8	7.66	45161	29.21
Composite 5	B	17	9/15/2017 07:59:03	13.1	91.5	7.7	45349	29.33
Composite 5	C	17	9/15/2017 07:59:44	13	93.9	7.75	45383	29.36
Composite 5	D	17	9/15/2017 08:00:08	13.1	91.2	7.72	45349	29.34
Composite 5	E	17	9/15/2017 08:00:31	13.4	90.9	7.72	45210	29.25
Composite 6	A	17	9/15/2017 08:00:50	13	87.7	7.67	45399	29.37
Composite 6	B	17	9/15/2017 08:01:13	13.1	93.3	7.69	45192	29.22
Composite 6	C	17	9/15/2017 08:01:30	12.8	94.3	7.71	45309	29.3
Composite 6	D	17	9/15/2017 08:01:50	12.8	93.9	7.72	45327	29.31
Composite 6	E	17	9/15/2017 08:02:05	12.8	94.2	7.72	45254	29.26
Composite 7	A	17	9/15/2017 08:02:30	13.1	90.4	7.7	45138	29.18
Composite 7	B	17	9/15/2017 08:02:56	12.5	93.9	7.71	45295	29.27
Composite 7	C	17	9/15/2017 08:03:17	12.7	94.4	7.72	45214	29.22
Composite 7	D	17	9/15/2017 08:03:43	12.8	92	7.7	45275	29.27
Composite 7	E	17	9/15/2017 08:04:30	12.8	94	7.74	45320	29.3
Composite 8	A	17	9/15/2017 08:04:55	12.9	93.6	7.74	45244	29.25
Composite 8	B	17	9/15/2017 08:05:24	12.9	91.5	7.72	45213	29.23
Composite 8	C	17	9/15/2017 08:05:42	12.6	94.8	7.74	45339	29.31
Composite 8	D	17	9/15/2017 08:06:08	13	90.6	7.73	45221	29.24
Composite 8	E	17	9/15/2017 08:06:32	13	85.1	7.68	45186	29.21

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	18	9/16/2017 08:43:10	13.1	116.2	7.77	45431	29.39
Laboratory Control	B	18	9/16/2017 08:43:35	13.1	111.8	7.79	45369	29.35
Laboratory Control	C	18	9/16/2017 08:43:58	13	106.9	7.77	45414	29.38
Laboratory Control	D	18	9/16/2017 08:44:18	12.8	104.1	7.76	45405	29.36
Laboratory Control	E	18	9/16/2017 08:45:08	12.8	100.6	7.75	45395	29.36
CLDS Reference Site	A	18	9/16/2017 08:45:31	12.7	104.8	7.83	45397	29.36
CLDS Reference Site	B	18	9/16/2017 08:45:51	12.9	104.8	7.8	45391	29.36
CLDS Reference Site	C	18	9/16/2017 08:46:09	12.8	103.1	7.81	45411	29.37
CLDS Reference Site	D	18	9/16/2017 08:46:27	12.5	102.8	7.84	45390	29.34
CLDS Reference Site	E	18	9/16/2017 08:46:51	12.6	101.5	7.85	45410	29.36
Composite 1	A	18	9/16/2017 08:47:19	12.7	100.9	7.86	45387	29.35
Composite 1	B	18	9/16/2017 08:47:34	12.8	101.3	7.86	45339	29.32
Composite 1	C	18	9/16/2017 08:48:12	13.1	98.9	7.84	45355	29.34
Composite 1	D	18	9/16/2017 08:48:34	13.1	100	7.86	45338	29.32
Composite 1	E	18	9/16/2017 08:48:56	13.2	100	7.85	45361	29.35
Composite 2	A	18	9/16/2017 08:49:23	13.2	97.2	7.82	45368	29.35
Composite 2	B	18	9/16/2017 08:49:38	13.1	97.5	7.83	45356	29.34
Composite 2	C	18	9/16/2017 08:49:57	13	98.2	7.84	45341	29.33
Composite 2	D	18	9/16/2017 08:50:24	12.9	97.8	7.86	45355	29.33
Composite 2	E	18	9/16/2017 08:50:49	13	94.4	7.83	45354	29.33
Composite 3	A	18	9/16/2017 08:51:18	13	97.5	7.83	45359	29.34
Composite 3	B	18	9/16/2017 08:51:41	12.9	96.8	7.81	45349	29.33
Composite 3	C	18	9/16/2017 08:52:07	12.9	96.5	7.83	45401	29.37
Composite 3	D	18	9/16/2017 08:52:29	12.8	95.6	7.82	45343	29.32
Composite 3	E	18	9/16/2017 08:53:00	13.1	100.2	7.9	45356	29.34
Composite 4	A	18	9/16/2017 08:53:19	13	99.6	7.92	45301	29.3
Composite 4	B	18	9/16/2017 08:53:42	13	99	7.91	45305	29.3
Composite 4	C	18	9/16/2017 08:53:59	13.2	96.8	7.89	45317	29.31
Composite 4	D	18	9/16/2017 08:54:14	13.2	96.1	7.85	45319	29.32
Composite 4	E	18	9/16/2017 08:54:38	13	99.5	7.91	45344	29.33
Composite 5	A	18	9/16/2017 08:55:12	13.1	94.5	7.85	45348	29.33
Composite 5	B	18	9/16/2017 08:55:37	13	95.3	7.85	45340	29.32
Composite 5	C	18	9/16/2017 08:55:55	12.8	98.5	7.9	45370	29.34
Composite 5	D	18	9/16/2017 08:56:13	13	96.9	7.88	45342	29.33
Composite 5	E	18	9/16/2017 08:56:30	13.1	96.4	7.87	45338	29.33
Composite 6	A	18	9/16/2017 08:56:46	13	95.2	7.82	45348	29.33
Composite 6	B	18	9/16/2017 08:58:22	12.6	98.7	7.87	45390	29.35
Composite 6	C	18	9/16/2017 08:58:41	12.6	98.3	7.86	45371	29.33
Composite 6	D	18	9/16/2017 08:58:57	12.6	98.2	7.87	45370	29.33
Composite 6	E	18	9/16/2017 08:59:19	12.5	97.6	7.87	45371	29.33
Composite 7	A	18	9/16/2017 08:59:35	12.5	96.3	7.84	45383	29.34
Composite 7	B	18	9/16/2017 09:00:03	12.3	96.3	7.86	45421	29.36
Composite 7	C	18	9/16/2017 09:00:47	12.2	97.7	7.88	45404	29.34
Composite 7	D	18	9/16/2017 09:01:08	12.7	97.3	7.85	45362	29.33
Composite 7	E	18	9/16/2017 09:01:25	12.6	98.6	7.87	45340	29.31
Composite 8	A	18	9/16/2017 09:01:41	12.5	98.6	7.89	45388	29.34
Composite 8	B	18	9/16/2017 09:02:00	12.4	97.1	7.87	45368	29.32
Composite 8	C	18	9/16/2017 09:02:27	12.3	99.4	7.9	45445	29.38
Composite 8	D	18	9/16/2017 09:02:56	12.7	96.2	7.88	45345	29.32
Composite 8	E	18	9/16/2017 09:03:20	12.7	89.2	7.81	45332	29.31

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	19	9/17/2017 10:40:24	13.1	94.9	7.33	47109	30.6
Laboratory Control	B	19	9/17/2017 10:40:39	13.1	95.5	7.44	47085	30.59
Laboratory Control	C	19	9/17/2017 10:41:01	13	93.3	7.5	47136	30.62
Laboratory Control	D	19	9/17/2017 10:41:13	12.8	94.1	7.53	47076	30.57
Laboratory Control	E	19	9/17/2017 10:41:31	12.9	93.1	7.55	47094	30.58
CLDS Reference Site	A	19	9/17/2017 10:41:54	12.9	97.6	7.63	47095	30.58
CLDS Reference Site	B	19	9/17/2017 10:43:40	12.9	92.2	7.63	47109	30.59
CLDS Reference Site	C	19	9/17/2017 10:43:59	12.9	94.9	7.64	47103	30.59
CLDS Reference Site	D	19	9/17/2017 10:44:23	12.5	97.9	7.71	46840	30.39
CLDS Reference Site	E	19	9/17/2017 10:44:40	12.5	97.8	7.73	46712	30.29
Composite 1	A	19	9/17/2017 10:44:50	12.6	97.9	7.73	46793	30.36
Composite 1	B	19	9/17/2017 10:45:08	12.9	97.5	7.72	47109	30.59
Composite 1	C	19	9/17/2017 10:47:13	12.9	95.4	7.73	47015	30.53
Composite 1	D	19	9/17/2017 10:47:30	12.9	97.4	7.75	46921	30.46
Composite 1	E	19	9/17/2017 10:47:45	13.1	95.4	7.72	47084	30.58
Composite 2	A	19	9/17/2017 10:48:01	13	93.7	7.71	47075	30.57
Composite 2	B	19	9/17/2017 10:48:15	13	95.1	7.72	47056	30.56
Composite 2	C	19	9/17/2017 10:48:26	12.9	96.2	7.73	47053	30.55
Composite 2	D	19	9/17/2017 10:48:44	12.7	97.3	7.75	46961	30.48
Composite 2	E	19	9/17/2017 10:49:00	12.8	93.2	7.73	47019	30.53
Composite 3	A	19	9/17/2017 10:49:12	12.9	94.6	7.72	47074	30.57
Composite 3	B	19	9/17/2017 10:49:34	12.6	91.6	7.71	46474	30.13
Composite 3	C	19	9/17/2017 10:49:47	12.7	94.4	7.72	46827	30.38
Composite 3	D	19	9/17/2017 10:50:08	12.7	94.8	7.71	47042	30.54
Composite 3	E	19	9/17/2017 10:51:56	12.8	99.9	7.83	46983	30.5
Composite 4	A	19	9/17/2017 10:52:13	12.8	98.9	7.84	46679	30.28
Composite 4	B	19	9/17/2017 10:52:27	12.8	98.2	7.83	46671	30.27
Composite 4	C	19	9/17/2017 10:52:41	12.9	94.9	7.81	46880	30.43
Composite 4	D	19	9/17/2017 10:52:54	13	93.8	7.76	47031	30.54
Composite 4	E	19	9/17/2017 10:53:13	12.9	99.2	7.81	47037	30.54
Composite 5	A	19	9/17/2017 10:53:36	13	92.2	7.74	47099	30.59
Composite 5	B	19	9/17/2017 10:53:53	12.8	95.4	7.76	46872	30.42
Composite 5	C	19	9/17/2017 10:54:10	12.7	99	7.82	46908	30.44
Composite 5	D	19	9/17/2017 10:54:25	12.9	96.1	7.78	47054	30.55
Composite 5	E	19	9/17/2017 10:54:40	13	95.7	7.76	47097	30.59
Composite 6	A	19	9/17/2017 10:54:57	12.9	93.1	7.71	47091	30.58
Composite 6	B	19	9/17/2017 10:56:28	12.7	98	7.78	47057	30.55
Composite 6	C	19	9/17/2017 10:56:45	12.8	97.7	7.77	47122	30.6
Composite 6	D	19	9/17/2017 10:56:56	12.7	98.1	7.77	47096	30.58
Composite 6	E	19	9/17/2017 10:57:28	12.7	97.3	7.77	47108	30.59
Composite 7	A	19	9/17/2017 10:57:42	12.7	95.9	7.75	47142	30.61
Composite 7	B	19	9/17/2017 10:58:16	12.4	98	7.76	47137	30.6
Composite 7	C	19	9/17/2017 10:59:16	12.4	98.8	7.78	47141	30.6
Composite 7	D	19	9/17/2017 10:59:41	12.8	96.9	7.75	47155	30.63
Composite 7	E	19	9/17/2017 10:59:51	12.7	97.8	7.76	47104	30.58
Composite 8	A	19	9/17/2017 11:00:04	12.7	98	7.78	47112	30.59
Composite 8	B	19	9/17/2017 11:00:20	12.6	95.7	7.76	47107	30.58
Composite 8	C	19	9/17/2017 11:00:36	12.5	98.9	7.79	47085	30.56
Composite 8	D	19	9/17/2017 11:01:24	12.6	95.2	7.79	46906	30.44
Composite 8	E	19	9/17/2017 11:01:42	12.6	90.6	7.72	47060	30.55

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	20	9/18/2017 11:06:15	13.2	96	7.71	46987	30.52
Laboratory Control	B	20	9/18/2017 11:06:39	13.2	96.3	7.72	46937	30.48
Laboratory Control	C	20	9/18/2017 11:06:55	13.1	94.4	7.7	46988	30.51
Laboratory Control	D	20	9/18/2017 11:07:29	12.8	94.5	7.71	47008	30.52
Laboratory Control	E	20	9/18/2017 11:07:51	12.9	94.2	7.71	46990	30.51
CLDS Reference Site	A	20	9/18/2017 11:08:11	12.6	100.9	7.79	46966	30.48
CLDS Reference Site	B	20	9/18/2017 11:09:18	12.9	92.6	7.72	46992	30.51
CLDS Reference Site	C	20	9/18/2017 11:09:38	12.8	97.1	7.75	47001	30.51
CLDS Reference Site	D	20	9/18/2017 11:09:57	12.6	99.5	7.78	46940	30.46
CLDS Reference Site	E	20	9/18/2017 11:10:11	12.6	99.9	7.81	46785	30.35
Composite 1	A	20	9/18/2017 11:10:25	12.7	99.7	7.81	46892	30.43
Composite 1	B	20	9/18/2017 11:10:43	13	98.6	7.79	46987	30.51
Composite 1	C	20	9/18/2017 11:11:43	13	97.6	7.79	46987	30.51
Composite 1	D	20	9/18/2017 11:11:57	12.9	99.3	7.81	46952	30.48
Composite 1	E	20	9/18/2017 11:12:09	12.8	98.6	7.8	46955	30.48
Composite 2	A	20	9/18/2017 11:12:23	13	95.3	7.77	46978	30.5
Composite 2	B	20	9/18/2017 11:12:36	13	95.4	7.76	46968	30.5
Composite 2	C	20	9/18/2017 11:12:47	12.9	97	7.78	46963	30.49
Composite 2	D	20	9/18/2017 11:13:44	12.9	97.8	7.8	46967	30.49
Composite 2	E	20	9/18/2017 11:14:02	12.9	93.9	7.78	46954	30.48
Composite 3	A	20	9/18/2017 11:14:15	12.7	96.2	7.78	46961	30.48
Composite 3	B	20	9/18/2017 11:14:40	12.7	95.2	7.77	46834	30.39
Composite 3	C	20	9/18/2017 11:15:05	12.9	97.2	7.78	46977	30.5
Composite 3	D	20	9/18/2017 11:15:19	12.8	97	7.77	46995	30.51
Composite 3	E	20	9/18/2017 11:19:14	12.7	102.1	7.91	46931	30.46
Composite 4	A	20	9/18/2017 11:19:33	12.8	101	7.9	46832	30.39
Composite 4	B	20	9/18/2017 11:19:55	12.9	99.8	7.86	46921	30.46
Composite 4	C	20	9/18/2017 11:20:12	12.8	96.6	7.86	46843	30.4
Composite 4	D	20	9/18/2017 11:20:29	13	94.9	7.8	46950	30.48
Composite 4	E	20	9/18/2017 11:21:01	12.9	101.4	7.88	46945	30.48
Composite 5	A	20	9/18/2017 11:21:53	13	93.3	7.79	46987	30.51
Composite 5	B	20	9/18/2017 11:22:09	12.8	96.7	7.81	46907	30.44
Composite 5	C	20	9/18/2017 11:22:26	12.8	100.5	7.87	46965	30.49
Composite 5	D	20	9/18/2017 11:22:46	12.9	97.7	7.83	46963	30.49
Composite 5	E	20	9/18/2017 11:23:07	13.1	96.7	7.81	46966	30.5
Composite 6	A	20	9/18/2017 11:23:22	12.9	93.6	7.76	46988	30.51
Composite 6	B	20	9/18/2017 11:24:17	12.6	100.4	7.84	46959	30.48
Composite 6	C	20	9/18/2017 11:24:43	12.8	99.3	7.82	46994	30.51
Composite 6	D	20	9/18/2017 11:25:03	12.8	99.5	7.82	46993	30.51
Composite 6	E	20	9/18/2017 11:25:24	12.8	99.3	7.82	46993	30.51
Composite 7	A	20	9/18/2017 11:25:41	12.8	97.7	7.8	46992	30.51
Composite 7	B	20	9/18/2017 11:26:03	12.6	99.2	7.81	47014	30.51
Composite 7	C	20	9/18/2017 11:26:58	12.6	99.9	7.83	47020	30.52
Composite 7	D	20	9/18/2017 11:27:19	12.5	98.6	7.8	46986	30.49
Composite 7	E	20	9/18/2017 11:27:36	12.7	100.1	7.83	46983	30.5
Composite 8	A	20	9/18/2017 11:27:46	12.8	100	7.83	46988	30.5
Composite 8	B	20	9/18/2017 11:28:13	12.7	95.3	7.79	46981	30.49
Composite 8	C	20	9/18/2017 11:28:32	12.6	100.5	7.84	46996	30.5
Composite 8	D	20	9/18/2017 11:29:37	12.9	96.1	7.79	46974	30.5
Composite 8	E	20	9/18/2017 11:29:55	12.8	92.5	7.76	46976	30.5

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	21	9/19/2017 08:52:36	12.7	95.5	7.64	45949	29.75
Laboratory Control	B	21	9/19/2017 08:52:56	12.6	96.1	7.68	45918	29.73
Laboratory Control	C	21	9/19/2017 08:53:17	12.6	96.1	7.7	45981	29.77
Laboratory Control	D	21	9/19/2017 08:53:34	12.5	97.6	7.72	45899	29.71
Laboratory Control	E	21	9/19/2017 08:53:50	12.5	95.8	7.72	45953	29.75
CLDS Reference Site	A	21	9/19/2017 08:56:17	12.5	99.2	7.8	45917	29.72
CLDS Reference Site	B	21	9/19/2017 08:56:45	12.5	93.5	7.76	45953	29.75
CLDS Reference Site	C	21	9/19/2017 08:57:04	12.5	96.6	7.77	45947	29.74
CLDS Reference Site	D	21	9/19/2017 08:57:23	12.5	98.5	7.79	45824	29.65
CLDS Reference Site	E	21	9/19/2017 08:57:45	12.5	99	7.79	45723	29.58
Composite 1	A	21	9/19/2017 08:58:02	12.6	98.5	7.8	45847	29.68
Composite 1	B	21	9/19/2017 08:58:21	12.7	98.5	7.8	45937	29.74
Composite 1	C	21	9/19/2017 08:58:45	12.7	98	7.8	45902	29.72
Composite 1	D	21	9/19/2017 08:59:00	12.6	98.7	7.81	45915	29.72
Composite 1	E	21	9/19/2017 08:59:21	12.6	97.1	7.8	45875	29.69
Composite 2	A	21	9/19/2017 08:59:38	12.6	95.2	7.78	45938	29.74
Composite 2	B	21	9/19/2017 08:59:51	12.6	95.2	7.78	45931	29.73
Composite 2	C	21	9/19/2017 09:00:13	12.6	96.6	7.79	45881	29.7
Composite 2	D	21	9/19/2017 09:00:36	12.6	97.8	7.8	45915	29.72
Composite 2	E	21	9/19/2017 09:00:58	12.6	94.6	7.79	45921	29.73
Composite 3	A	21	9/19/2017 09:01:22	12.6	95.8	7.78	45918	29.73
Composite 3	B	21	9/19/2017 09:01:40	12.6	94.9	7.78	45864	29.69
Composite 3	C	21	9/19/2017 09:01:58	12.6	97.3	7.79	45956	29.75
Composite 3	D	21	9/19/2017 09:02:12	12.6	96.9	7.78	45925	29.73
Composite 3	E	21	9/19/2017 09:02:46	12.6	100.8	7.86	45846	29.67
Composite 4	A	21	9/19/2017 09:03:00	12.6	100.4	7.87	45791	29.64
Composite 4	B	21	9/19/2017 09:03:19	12.6	98.9	7.86	45854	29.68
Composite 4	C	21	9/19/2017 09:03:36	12.6	95.7	7.83	45859	29.68
Composite 4	D	21	9/19/2017 09:03:59	12.6	95.3	7.81	45911	29.72
Composite 4	E	21	9/19/2017 09:04:22	12.6	100.2	7.85	45945	29.74
Composite 5	A	21	9/19/2017 09:05:01	12.6	92.6	7.8	45981	29.77
Composite 5	B	21	9/19/2017 09:05:21	12.6	96.4	7.8	45894	29.71
Composite 5	C	21	9/19/2017 09:05:47	12.6	99.4	7.86	45879	29.7
Composite 5	D	21	9/19/2017 09:06:13	12.6	97	7.83	45944	29.75
Composite 5	E	21	9/19/2017 09:06:30	12.6	96.7	7.82	45965	29.76
Composite 6	A	21	9/19/2017 09:06:47	12.7	93.4	7.78	45972	29.77
Composite 6	B	21	9/19/2017 09:07:45	12.5	98.4	7.82	45889	29.7
Composite 6	C	21	9/19/2017 09:08:13	12.5	98.3	7.82	45955	29.75
Composite 6	D	21	9/19/2017 09:08:37	12.4	98.7	7.82	45962	29.75
Composite 6	E	21	9/19/2017 09:08:59	12.4	98.1	7.82	45950	29.74
Composite 7	A	21	9/19/2017 09:09:17	12.3	97.8	7.8	45976	29.76
Composite 7	B	21	9/19/2017 09:09:41	12.2	99	7.81	45974	29.75
Composite 7	C	21	9/19/2017 09:10:23	12.2	99.1	7.83	46002	29.77
Composite 7	D	21	9/19/2017 09:10:45	12.3	96.7	7.8	45918	29.71
Composite 7	E	21	9/19/2017 09:11:13	12.4	98.5	7.82	45913	29.71
Composite 8	A	21	9/19/2017 09:11:32	12.4	98.3	7.83	45993	29.77
Composite 8	B	21	9/19/2017 09:12:04	12.4	94.8	7.8	45966	29.75
Composite 8	C	21	9/19/2017 09:12:26	12.4	99.2	7.84	45997	29.77
Composite 8	D	21	9/19/2017 09:12:57	12.5	96.3	7.81	45992	29.78
Composite 8	E	21	9/19/2017 09:13:20	12.5	92.4	7.78	45962	29.75

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	22	9/20/2017 10:11:25	12.7	95.1	7.75	47564	30.92
Laboratory Control	B	22	9/20/2017 10:11:40	12.7	95.4	7.76	47533	30.89
Laboratory Control	C	22	9/20/2017 10:11:56	12.6	95.4	7.76	47592	30.93
Laboratory Control	D	22	9/20/2017 10:12:17	12.5	96.3	7.77	47595	30.93
Laboratory Control	E	22	9/20/2017 10:12:40	12.5	94.1	7.77	47568	30.91
CLDS Reference Site	A	22	9/20/2017 10:12:59	12.4	99	7.81	47531	30.88
CLDS Reference Site	B	22	9/20/2017 10:13:36	12.5	92.9	7.79	47544	30.89
CLDS Reference Site	C	22	9/20/2017 10:14:02	12.5	96	7.8	47569	30.91
CLDS Reference Site	D	22	9/20/2017 10:14:21	12.4	97.9	7.82	47481	30.84
CLDS Reference Site	E	22	9/20/2017 10:14:37	12.5	97.9	7.82	47414	30.8
Composite 1	A	22	9/20/2017 10:14:53	12.6	98.2	7.83	47501	30.87
Composite 1	B	22	9/20/2017 10:15:04	12.7	97.7	7.83	47569	30.92
Composite 1	C	22	9/20/2017 10:15:40	12.7	95.2	7.81	47547	30.9
Composite 1	D	22	9/20/2017 10:16:06	12.6	97.8	7.83	47548	30.9
Composite 1	E	22	9/20/2017 10:16:20	12.6	96.2	7.83	47516	30.88
Composite 2	A	22	9/20/2017 10:17:56	12.6	94.1	7.81	47562	30.91
Composite 2	B	22	9/20/2017 10:18:10	12.6	94.9	7.8	47554	30.9
Composite 2	C	22	9/20/2017 10:18:28	12.6	96.4	7.82	47536	30.89
Composite 2	D	22	9/20/2017 10:18:55	12.6	96.8	7.83	47551	30.9
Composite 2	E	22	9/20/2017 10:19:14	12.6	93.7	7.82	47549	30.9
Composite 3	A	22	9/20/2017 10:19:36	12.6	95.2	7.82	47553	30.9
Composite 3	B	22	9/20/2017 10:19:51	12.6	94.4	7.81	47517	30.88
Composite 3	C	22	9/20/2017 10:20:08	12.6	96	7.82	47566	30.91
Composite 3	D	22	9/20/2017 10:20:20	12.6	95.7	7.82	47566	30.91
Composite 3	E	22	9/20/2017 10:21:07	12.6	99.7	7.88	47499	30.86
Composite 4	A	22	9/20/2017 10:21:28	12.6	98.7	7.89	47431	30.82
Composite 4	B	22	9/20/2017 10:21:49	12.6	98.2	7.88	47455	30.83
Composite 4	C	22	9/20/2017 10:22:09	12.6	93.1	7.85	47492	30.86
Composite 4	D	22	9/20/2017 10:22:19	12.6	93.6	7.83	47544	30.9
Composite 4	E	22	9/20/2017 10:22:43	12.6	99.7	7.87	47563	30.91
Composite 5	A	22	9/20/2017 10:23:09	12.7	91.2	7.83	47587	30.93
Composite 5	B	22	9/20/2017 10:23:35	12.6	95.6	7.83	47531	30.89
Composite 5	C	22	9/20/2017 10:23:51	12.6	98.5	7.87	47558	30.91
Composite 5	D	22	9/20/2017 10:24:10	12.6	96.2	7.86	47578	30.92
Composite 5	E	22	9/20/2017 10:24:21	12.7	95.6	7.85	47565	30.91
Composite 6	A	22	9/20/2017 10:24:35	12.7	92.9	7.8	47569	30.92
Composite 6	B	22	9/20/2017 10:25:26	12.5	98	7.83	47543	30.89
Composite 6	C	22	9/20/2017 10:25:44	12.5	98	7.83	47584	30.92
Composite 6	D	22	9/20/2017 10:26:10	12.4	98.3	7.84	47578	30.91
Composite 6	E	22	9/20/2017 10:26:31	12.4	97.7	7.84	47590	30.92
Composite 7	A	22	9/20/2017 10:26:45	12.3	97.5	7.83	47614	30.94
Composite 7	B	22	9/20/2017 10:27:01	12.2	97.7	7.82	47593	30.92
Composite 7	C	22	9/20/2017 10:27:33	12.2	98.8	7.84	47601	30.92
Composite 7	D	22	9/20/2017 10:27:46	12.3	97.1	7.82	47524	30.87
Composite 7	E	22	9/20/2017 10:28:09	12.4	98	7.84	47569	30.91
Composite 8	A	22	9/20/2017 10:28:27	12.4	98.3	7.85	47592	30.92
Composite 8	B	22	9/20/2017 10:28:42	12.4	94.7	7.82	47602	30.93
Composite 8	C	22	9/20/2017 10:29:06	12.4	98.4	7.85	47621	30.94
Composite 8	D	22	9/20/2017 10:30:03	12.5	95.5	7.83	47587	30.92
Composite 8	E	22	9/20/2017 10:30:26	12.5	93.2	7.81	47586	30.92

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	23	9/21/2017 10:03:10	12.6	95.1	7.86	47761	31.05
Laboratory Control	B	23	9/21/2017 10:03:27	12.6	96.1	7.85	47745	31.04
Laboratory Control	C	23	9/21/2017 10:03:39	12.5	95.7	7.85	47807	31.08
Laboratory Control	D	23	9/21/2017 10:03:50	12.5	95.5	7.84	47765	31.05
Laboratory Control	E	23	9/21/2017 10:04:03	12.4	95.2	7.84	47763	31.05
CLDS Reference Site	A	23	9/21/2017 10:04:21	12.4	99	7.87	47743	31.03
CLDS Reference Site	B	23	9/21/2017 10:04:50	12.4	93.2	7.86	47776	31.06
CLDS Reference Site	C	23	9/21/2017 10:05:07	12.4	96.3	7.86	47768	31.05
CLDS Reference Site	D	23	9/21/2017 10:05:26	12.4	98.1	7.87	47740	31.03
CLDS Reference Site	E	23	9/21/2017 10:05:36	12.5	98	7.87	47729	31.03
Composite 1	A	23	9/21/2017 10:05:51	12.6	98.1	7.87	47721	31.02
Composite 1	B	23	9/21/2017 10:06:07	12.6	97.8	7.88	47750	31.05
Composite 1	C	23	9/21/2017 10:06:34	12.6	95.3	7.86	47729	31.03
Composite 1	D	23	9/21/2017 10:06:56	12.6	97.1	7.88	47775	31.06
Composite 1	E	23	9/21/2017 10:07:13	12.5	96.8	7.86	47679	30.99
Composite 2	A	23	9/21/2017 10:07:32	12.5	92.7	7.86	47749	31.04
Composite 2	B	23	9/21/2017 10:07:50	12.5	94.7	7.86	47748	31.04
Composite 2	C	23	9/21/2017 10:08:03	12.5	96.9	7.87	47753	31.04
Composite 2	D	23	9/21/2017 10:09:40	12.5	97.7	7.89	47753	31.04
Composite 2	E	23	9/21/2017 10:09:56	12.5	93.8	7.88	47745	31.04
Composite 3	A	23	9/21/2017 10:10:10	12.5	95.1	7.87	47740	31.04
Composite 3	B	23	9/21/2017 10:10:23	12.5	95	7.86	47729	31.03
Composite 3	C	23	9/21/2017 10:10:38	12.5	97.1	7.87	47792	31.07
Composite 3	D	23	9/21/2017 10:10:48	12.6	95.9	7.86	47742	31.04
Composite 3	E	23	9/21/2017 10:11:22	12.5	100.6	7.9	47708	31.01
Composite 4	A	23	9/21/2017 10:11:35	12.6	99.1	7.9	47731	31.03
Composite 4	B	23	9/21/2017 10:11:51	12.6	98.3	7.9	47673	30.99
Composite 4	C	23	9/21/2017 10:12:02	12.6	93.9	7.88	47698	31.01
Composite 4	D	23	9/21/2017 10:12:23	12.6	92.8	7.86	47755	31.05
Composite 4	E	23	9/21/2017 10:12:42	12.5	100.2	7.89	47742	31.04
Composite 5	A	23	9/21/2017 10:13:08	12.5	90.6	7.88	47802	31.08
Composite 5	B	23	9/21/2017 10:13:26	12.6	94.8	7.87	47702	31.01
Composite 5	C	23	9/21/2017 10:13:45	12.5	98.9	7.91	47750	31.04
Composite 5	D	23	9/21/2017 10:14:05	12.6	96.6	7.89	47746	31.04
Composite 5	E	23	9/21/2017 10:14:18	12.6	95.9	7.89	47779	31.07
Composite 6	A	23	9/21/2017 10:14:30	12.6	93.5	7.85	47794	31.08
Composite 6	B	23	9/21/2017 11:53:29	12.4	101.7	7.81	47799	31.07
Composite 6	C	23	9/21/2017 11:53:45	12.3	102.6	7.82	47821	31.09
Composite 6	D	23	9/21/2017 11:53:58	12.3	102.3	7.83	47834	31.09
Composite 6	E	23	9/21/2017 11:54:12	12.2	102.3	7.83	47822	31.08
Composite 7	A	23	9/21/2017 11:54:22	12.1	101.4	7.82	47835	31.09
Composite 7	B	23	9/21/2017 11:54:36	12	102	7.82	47844	31.09
Composite 7	C	23	9/21/2017 11:55:16	12.1	101.9	7.83	47846	31.09
Composite 7	D	23	9/21/2017 11:55:38	12.2	100	7.82	47833	31.09
Composite 7	E	23	9/21/2017 11:55:49	12.3	100.9	7.83	47823	31.08
Composite 8	A	23	9/21/2017 11:56:01	12.3	101.3	7.84	47828	31.09
Composite 8	B	23	9/21/2017 11:56:17	12.2	97.9	7.83	47829	31.09
Composite 8	C	23	9/21/2017 11:56:43	12.2	101.7	7.84	47829	31.09
Composite 8	D	23	9/21/2017 11:57:17	12.4	97.6	7.85	47812	31.08
Composite 8	E	23	9/21/2017 11:57:29	12.3	96.1	7.84	47809	31.08

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	24	9/22/2017 12:35:29	13.1		7.77	46525	30.18
Laboratory Control	B	24	9/22/2017 12:35:51	13.1		7.78	46533	30.18
Laboratory Control	C	24	9/22/2017 12:36:13	13.2		7.78	46501	30.17
Laboratory Control	D	24	9/22/2017 12:36:31	12.8		7.79	46335	30.03
Laboratory Control	E	24	9/22/2017 12:36:51	12.8		7.78	46513	30.16
CLDS Reference Site	A	24	9/22/2017 12:37:08	12.7	100.8	7.82	46530	30.17
CLDS Reference Site	B	24	9/22/2017 12:37:30	12.7	93.9	7.8	46540	30.18
CLDS Reference Site	C	24	9/22/2017 12:37:51	12.7	97.8	7.81	46521	30.16
CLDS Reference Site	D	24	9/22/2017 12:38:08	12.5	99.7	7.82	46570	30.19
CLDS Reference Site	E	24	9/22/2017 12:38:27	12.7	99.9	7.82	46537	30.18
Composite 1	A	24	9/22/2017 12:38:52	12.7	99	7.83	46569	30.2
Composite 1	B	24	9/22/2017 12:39:14	12.9	98.6	7.83	46490	30.15
Composite 1	C	24	9/22/2017 12:39:38	13	97.7	7.83	46509	30.17
Composite 1	D	24	9/22/2017 12:39:59	13	97.3	7.84	46521	30.17
Composite 1	E	24	9/22/2017 12:40:17	13.1	95.4	7.82	46504	30.16
Composite 2	A	24	9/22/2017 12:40:33	13	93.2	7.82	46519	30.17
Composite 2	B	24	9/22/2017 12:40:54	13	94.5	7.82	46509	30.16
Composite 2	C	24	9/22/2017 12:41:16	13	96.6	7.83	46504	30.16
Composite 2	D	24	9/22/2017 12:41:43	12.9	97.2	7.84	46535	30.18
Composite 2	E	24	9/22/2017 12:42:06	12.8	93.2	7.84	46532	30.18
Composite 3	A	24	9/22/2017 12:42:26	12.8	95.4	7.83	46512	30.16
Composite 3	B	24	9/22/2017 12:42:46	12.8	94.7	7.82	46507	30.16
Composite 3	C	24	9/22/2017 12:43:02	12.9	95.4	7.82	46530	30.18
Composite 3	D	24	9/22/2017 12:43:16	12.7	95.8	7.82	46564	30.2
Composite 3	E	24	9/22/2017 12:43:40	12.9	100	7.87	46538	30.18
Composite 4	A	24	9/22/2017 12:44:03	12.9	99.5	7.88	46522	30.17
Composite 4	B	24	9/22/2017 12:44:23	12.9	98.2	7.87	46495	30.15
Composite 4	C	24	9/22/2017 12:44:44	12.9	91.1	7.85	46495	30.15
Composite 4	D	24	9/22/2017 12:44:57	13.1	93.9	7.83	46506	30.17
Composite 4	E	24	9/22/2017 12:45:14	12.9	100	7.87	46519	30.17
Composite 5	A	24	9/22/2017 12:45:37	13.2	89.6	7.83	46486	30.16
Composite 5	B	24	9/22/2017 12:45:53	12.8	95.3	7.83	46527	30.17
Composite 5	C	24	9/22/2017 12:46:10	12.8	99	7.87	46512	30.16
Composite 5	D	24	9/22/2017 12:46:28	12.9	94.8	7.85	46527	30.17
Composite 5	E	24	9/22/2017 12:46:47	12.9	95	7.85	46603	30.23
Composite 6	A	24	9/22/2017 12:47:03	12.8	91.2	7.8	46524	30.17
Composite 6	B	24	9/22/2017 12:47:44	12.6	97.7	7.82	46590	30.21
Composite 6	C	24	9/22/2017 12:48:02	12.6	97.6	7.83	46576	30.2
Composite 6	D	24	9/22/2017 12:48:25	12.6	97.3	7.83	46549	30.18
Composite 6	E	24	9/22/2017 12:48:41	12.6	98	7.84	46528	30.16
Composite 7	A	24	9/22/2017 12:49:04	12.6	96.1	7.82	46519	30.16
Composite 7	B	24	9/22/2017 12:49:25	12.3	96.4	7.82	46568	30.18
Composite 7	C	24	9/22/2017 12:49:40	12.3	99.1	7.83	46570	30.18
Composite 7	D	24	9/22/2017 12:50:06	12.6	96.1	7.82	46518	30.16
Composite 7	E	24	9/22/2017 12:50:26	12.7	95.8	7.83	46552	30.19
Composite 8	A	24	9/22/2017 12:50:40	12.7	97.3	7.84	46552	30.19
Composite 8	B	24	9/22/2017 12:50:58	12.6	95.2	7.83	46539	30.17
Composite 8	C	24	9/22/2017 12:51:18	12.5	98.9	7.85	46555	30.18
Composite 8	D	24	9/22/2017 12:51:43	12.7	92.4	7.83	46521	30.16
Composite 8	E	24	9/22/2017 12:51:59	12.6	93	7.82	46511	30.15

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	25	9/23/2017 08:58:00	12.6	108.3	7.79	46622	30.23
Laboratory Control	B	25	9/23/2017 08:58:21	12.5	106.9	7.79	46613	30.22
Laboratory Control	C	25	9/23/2017 08:58:50	12.5	103.3	7.81	46622	30.23
Laboratory Control	D	25	9/23/2017 08:59:05	12.5	104.1	7.8	46590	30.2
Laboratory Control	E	25	9/23/2017 08:59:30	12.4	101.4	7.8	46607	30.22
CLDS Reference Site	A	25	9/23/2017 08:59:48	12.4	105.9	7.83	46588	30.2
CLDS Reference Site	B	25	9/23/2017 09:00:11	12.4	96.3	7.8	46576	30.19
CLDS Reference Site	C	25	9/23/2017 09:00:31	12.4	101.2	7.81	46591	30.2
CLDS Reference Site	D	25	9/23/2017 09:00:49	12.4	103	7.83	46591	30.2
CLDS Reference Site	E	25	9/23/2017 09:01:04	12.5	102.4	7.83	46587	30.2
Composite 1	A	25	9/23/2017 09:01:26	12.6	102.6	7.84	46563	30.19
Composite 1	B	25	9/23/2017 09:01:45	12.6	102.7	7.85	46611	30.22
Composite 1	C	25	9/23/2017 09:02:12	12.6	99.6	7.84	46611	30.22
Composite 1	D	25	9/23/2017 09:02:26	12.6	100.9	7.85	46581	30.2
Composite 1	E	25	9/23/2017 09:02:58	12.5	98.8	7.83	46603	30.22
Composite 2	A	25	9/23/2017 09:03:19	12.5	95.3	7.83	46601	30.21
Composite 2	B	25	9/23/2017 09:03:43	12.5	97.6	7.83	46600	30.21
Composite 2	C	25	9/23/2017 09:04:01	12.5	99.4	7.84	46599	30.21
Composite 2	D	25	9/23/2017 09:04:25	12.5	100.3	7.85	46574	30.19
Composite 2	E	25	9/23/2017 09:04:45	12.5	93.3	7.83	46558	30.18
Composite 3	A	25	9/23/2017 09:05:12	12.5	97.3	7.83	46597	30.21
Composite 3	B	25	9/23/2017 09:05:30	12.5	95.9	7.82	46570	30.19
Composite 3	C	25	9/23/2017 09:05:51	12.6	97.8	7.83	46625	30.23
Composite 3	D	25	9/23/2017 09:06:14	12.5	98	7.83	46651	30.25
Composite 3	E	25	9/23/2017 09:06:42	12.5	102.1	7.88	46615	30.22
Composite 4	A	25	9/23/2017 09:07:09	12.6	100.9	7.89	46557	30.19
Composite 4	B	25	9/23/2017 09:07:36	12.6	99.8	7.88	46582	30.2
Composite 4	C	25	9/23/2017 09:07:56	12.6	95.7	7.86	46578	30.2
Composite 4	D	25	9/23/2017 09:08:13	12.6	96	7.85	46605	30.22
Composite 4	E	25	9/23/2017 09:08:33	12.5	101.1	7.88	46603	30.22
Composite 5	A	25	9/23/2017 09:09:01	12.6	92.4	7.86	46639	30.24
Composite 5	B	25	9/23/2017 09:09:21	12.6	95.5	7.84	46581	30.2
Composite 5	C	25	9/23/2017 09:09:44	12.5	100.5	7.89	46602	30.21
Composite 5	D	25	9/23/2017 09:10:03	12.6	95.6	7.87	46612	30.22
Composite 5	E	25	9/23/2017 09:10:23	12.6	96.6	7.87	46635	30.24
Composite 6	A	25	9/23/2017 09:10:46	12.6	92.1	7.8	46622	30.23
Composite 6	B	25	9/23/2017 09:12:06	12.4	99.4	7.84	46634	30.23
Composite 6	C	25	9/23/2017 09:12:37	12.4	97.7	7.85	46623	30.23
Composite 6	D	25	9/23/2017 09:13:08	12.3	98.3	7.85	46638	30.23
Composite 6	E	25	9/23/2017 09:13:35	12.3	98.6	7.86	46630	30.22
Composite 7	A	25	9/23/2017 09:14:05	12.2	97.5	7.84	46649	30.24
Composite 7	B	25	9/23/2017 09:14:24	12.1	98.9	7.84	46645	30.23
Composite 7	C	25	9/23/2017 09:15:20	12.1	99.3	7.86	46647	30.23
Composite 7	D	25	9/23/2017 09:15:57	12.3	96.6	7.83	46622	30.22
Composite 7	E	25	9/23/2017 09:16:20	12.3	98.5	7.85	46625	30.22
Composite 8	A	25	9/23/2017 09:16:55	12.3	99.3	7.88	46648	30.24
Composite 8	B	25	9/23/2017 09:17:38	12.3	95.7	7.83	46646	30.24
Composite 8	C	25	9/23/2017 09:18:19	12.3	100	7.87	46649	30.24
Composite 8	D	25	9/23/2017 09:19:28	12.5	96.1	7.85	46614	30.22
Composite 8	E	25	9/23/2017 09:19:49	12.4	94	7.83	46612	30.22

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	26	9/24/2017 10:53:39	14	106.5	7.81	47913	31.21
Laboratory Control	B	26	9/24/2017 10:53:58	13.7	105.1	7.81	47894	31.19
Laboratory Control	C	26	9/24/2017 10:54:16	13.9	102	7.82	47934	31.22
Laboratory Control	D	26	9/24/2017 10:54:28	13.5	102.1	7.82	47933	31.21
Laboratory Control	E	26	9/24/2017 10:54:37	13.6	101.5	7.82	47920	31.2
CLDS Reference Site	A	26	9/24/2017 10:54:55	13.4	104.8	7.85	47917	31.2
CLDS Reference Site	B	26	9/24/2017 10:55:37	13.2	96.5	7.84	47919	31.19
CLDS Reference Site	C	26	9/24/2017 10:55:57	13.4	99.5	7.85	47929	31.2
CLDS Reference Site	D	26	9/24/2017 10:56:27	13	100.9	7.86	47948	31.2
CLDS Reference Site	E	26	9/24/2017 10:57:50	13.3	100.6	7.87	47922	31.2
Composite 1	A	26	9/24/2017 10:58:00	13.1	100	7.87	47962	31.22
Composite 1	B	26	9/24/2017 10:58:21	13.6	99.5	7.88	47922	31.21
Composite 1	C	26	9/24/2017 10:58:53	13.3	97.5	7.86	47948	31.22
Composite 1	D	26	9/24/2017 10:59:02	13.5	98.7	7.87	47926	31.21
Composite 1	E	26	9/24/2017 10:59:17	13.8	96.2	7.86	47907	31.2
Composite 2	A	26	9/24/2017 10:59:39	13.6	94.4	7.86	47923	31.21
Composite 2	B	26	9/24/2017 10:59:50	13.7	95.4	7.86	47908	31.2
Composite 2	C	26	9/24/2017 11:00:04	13.7	97.6	7.86	47912	31.2
Composite 2	D	26	9/24/2017 11:00:51	13.3	97.1	7.87	47933	31.2
Composite 2	E	26	9/24/2017 11:01:08	13.2	93.2	7.86	47934	31.2
Composite 3	A	26	9/24/2017 11:01:21	13.4	95.6	7.86	47932	31.21
Composite 3	B	26	9/24/2017 11:01:30	13.3	96.2	7.86	47921	31.2
Composite 3	C	26	9/24/2017 11:01:39	13.5	96.5	7.86	47927	31.21
Composite 3	D	26	9/24/2017 11:01:52	13.2	97.7	7.87	47964	31.22
Composite 3	E	26	9/24/2017 11:03:11	13.1	100.8	7.92	47975	31.23
Composite 4	A	26	9/24/2017 11:03:33	13.4	99	7.9	47921	31.2
Composite 4	B	26	9/24/2017 11:03:47	13.4	98.5	7.9	47917	31.2
Composite 4	C	26	9/24/2017 11:04:03	13.5	95	7.88	47952	31.23
Composite 4	D	26	9/24/2017 11:04:17	13.9	95.7	7.87	47900	31.2
Composite 4	E	26	9/24/2017 11:04:41	13.5	100.5	7.91	47924	31.2
Composite 5	A	26	9/24/2017 11:05:16	14.1	92	7.87	47902	31.21
Composite 5	B	26	9/24/2017 11:05:36	13.4	95	7.86	47937	31.21
Composite 5	C	26	9/24/2017 11:05:45	13.4	97.7	7.89	47948	31.22
Composite 5	D	26	9/24/2017 11:05:59	13.5	96.7	7.88	47958	31.23
Composite 5	E	26	9/24/2017 11:06:14	13.5	96.4	7.88	47951	31.22
Composite 6	A	26	9/24/2017 11:06:26	13.2	94.1	7.85	47958	31.22
Composite 6	B	26	9/24/2017 11:07:16	12.8	99.1	7.86	47994	31.23
Composite 6	C	26	9/24/2017 11:07:25	13	98.8	7.87	47976	31.22
Composite 6	D	26	9/24/2017 11:07:40	12.9	99.2	7.87	47987	31.23
Composite 6	E	26	9/24/2017 11:08:01	13.1	98.4	7.88	47955	31.21
Composite 7	A	26	9/24/2017 11:08:12	12.9	98	7.87	47979	31.22
Composite 7	B	26	9/24/2017 11:08:26	12.5	99.1	7.86	48030	31.24
Composite 7	C	26	9/24/2017 11:08:59	12.4	100.1	7.87	48022	31.24
Composite 7	D	26	9/24/2017 11:09:14	13	96.9	7.85	47980	31.23
Composite 7	E	26	9/24/2017 11:09:28	13.2	98.7	7.86	47971	31.23
Composite 8	A	26	9/24/2017 11:09:41	13.6	98.6	7.88	47933	31.22
Composite 8	B	26	9/24/2017 11:09:48	13.4	98	7.87	47921	31.2
Composite 8	C	26	9/24/2017 11:10:03	12.7	99.6	7.88	48038	31.26
Composite 8	D	26	9/24/2017 11:10:37	12.9	96.3	7.86	47963	31.21
Composite 8	E	26	9/24/2017 11:10:50	13.2	93.9	7.85	47956	31.22

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	27	9/25/2017 11:26:59	13.9	95.4	7.67	47602	30.98
Laboratory Control	B	27	9/25/2017 11:27:14	13.7	96.4	7.67	47536	30.93
Laboratory Control	C	27	9/25/2017 11:27:28	13.7	97.1	7.68	47725	31.07
Laboratory Control	D	27	9/25/2017 11:27:40	13.5	98.5	7.69	47627	30.99
Laboratory Control	E	27	9/25/2017 11:27:53	13.5	98.6	7.7	47626	30.99
CLDS Reference Site	A	27	9/25/2017 11:28:00	13.3	99.8	7.72	47609	30.97
CLDS Reference Site	B	27	9/25/2017 11:28:31	13.2	94.5	7.71	47672	31.01
CLDS Reference Site	C	27	9/25/2017 11:28:43	13.3	95.3	7.71	47646	31
CLDS Reference Site	D	27	9/25/2017 11:28:57	13	98.3	7.72	47716	31.03
CLDS Reference Site	E	27	9/25/2017 11:29:06	13	99	7.73	47679	31.01
Composite 1	A	27	9/25/2017 11:29:15	13	99.2	7.73	47694	31.02
Composite 1	B	27	9/25/2017 11:29:25	13.4	98.3	7.73	47653	31
Composite 1	C	27	9/25/2017 11:29:47	13.7	95.1	7.73	47639	31
Composite 1	D	27	9/25/2017 11:29:58	13.8	96.9	7.73	47641	31.01
Composite 1	E	27	9/25/2017 11:30:19	13.6	94.8	7.72	47673	31.02
Composite 2	A	27	9/25/2017 11:30:35	13.4	89.7	7.71	47817	31.12
Composite 2	B	27	9/25/2017 11:30:58	13.7	94	7.72	47627	31
Composite 2	C	27	9/25/2017 11:31:09	13.7	95.4	7.73	47628	30.99
Composite 2	D	27	9/25/2017 11:31:18	13.6	96.6	7.73	47628	30.99
Composite 2	E	27	9/25/2017 11:31:26	13.5	94.5	7.73	47641	31
Composite 3	A	27	9/25/2017 11:31:36	13.6	93.7	7.72	47637	31
Composite 3	B	27	9/25/2017 11:31:45	13.4	94.3	7.72	47674	31.02
Composite 3	C	27	9/25/2017 11:31:54	13.5	95.2	7.72	47674	31.02
Composite 3	D	27	9/25/2017 11:32:15	13.1	95.8	7.73	47703	31.03
Composite 3	E	27	9/25/2017 11:32:46	13.1	100.8	7.79	47786	31.09
Composite 4	A	27	9/25/2017 11:33:02	13.6	98.8	7.78	47662	31.02
Composite 4	B	27	9/25/2017 11:33:23	13.8	96.7	7.76	47624	31
Composite 4	C	27	9/25/2017 11:33:44	13.7	93.6	7.75	47682	31.04
Composite 4	D	27	9/25/2017 11:33:54	13.8	94.3	7.74	47634	31
Composite 4	E	27	9/25/2017 11:34:09	13.5	99.6	7.78	47668	31.02
Composite 5	A	27	9/25/2017 11:34:33	13.9	89	7.72	47595	30.98
Composite 5	B	27	9/25/2017 11:34:46	13.3	93.7	7.72	47751	31.07
Composite 5	C	27	9/25/2017 11:35:00	13.5	98	7.77	47667	31.02
Composite 5	D	27	9/25/2017 11:37:23	13.5	93.3	7.72	47678	31.03
Composite 5	E	27	9/25/2017 11:37:37	13.6	94.2	7.74	47631	31
Composite 6	A	27	9/25/2017 11:37:54	13.2	91.6	7.7	47660	31
Composite 6	B	27	9/25/2017 11:38:33	12.8	97.8	7.74	47751	31.05
Composite 6	C	27	9/25/2017 11:38:48	13.1	97.4	7.75	47688	31.02
Composite 6	D	27	9/25/2017 11:39:00	13.2	96.5	7.75	47653	31
Composite 6	E	27	9/25/2017 11:39:16	13	97.5	7.75	47684	31.01
Composite 7	A	27	9/25/2017 11:39:28	13.1	96.8	7.75	47652	30.99
Composite 7	B	27	9/25/2017 11:39:37	12.8	96.9	7.75	47665	30.99
Composite 7	C	27	9/25/2017 11:40:11	12.7	98.4	7.76	47699	31.01
Composite 7	D	27	9/25/2017 11:40:38	13.2	95.9	7.73	47664	31
Composite 7	E	27	9/25/2017 11:40:46	13.3	96.7	7.74	47665	31.01
Composite 8	A	27	9/25/2017 11:40:56	13.4	97.2	7.75	47639	30.99
Composite 8	B	27	9/25/2017 11:41:12	13.1	93.2	7.73	47670	31
Composite 8	C	27	9/25/2017 11:41:33	12.5	99.1	7.76	47778	31.06
Composite 8	D	27	9/25/2017 11:42:11	13.4	92.6	7.74	47615	30.98
Composite 8	E	27	9/25/2017 11:42:21	13.4	91.8	7.73	47620	30.98

STUDY: 29524
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Macoma nasuta*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.5	99.24		45595	29.49
Minimum:	11.9	61.20	7.62	43635	28.09
Maximum:	12.8	118.90	7.97	46790	30.35

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	28	9/26/2017 09:28:01	12.8	101.6	7.69	46392	30.07
Laboratory Control	B	28	9/26/2017 09:28:22	12.7	102	7.69	46204	29.94
Laboratory Control	C	28	9/26/2017 09:28:39	12.6	103.2	7.7	46377	30.05
Laboratory Control	D	28	9/26/2017 09:29:03	12.5	104.4	7.73	46394	30.06
Laboratory Control	E	28	9/26/2017 09:29:34	12.4	104.7	7.76	46402	30.07
CLDS Reference Site	A	28	9/26/2017 09:29:59	12.4	105.5	7.78	46394	30.06
CLDS Reference Site	B	28	9/26/2017 09:30:20	12.3	100	7.75	46409	30.07
CLDS Reference Site	C	28	9/26/2017 09:30:42	12.3	101.9	7.75	46394	30.06
CLDS Reference Site	D	28	9/26/2017 09:31:00	12.4	103.3	7.77	46458	30.11
CLDS Reference Site	E	28	9/26/2017 09:31:17	12.4	103.7	7.78	46416	30.08
Composite 1	A	28	9/26/2017 09:31:57	12.5	103.1	7.79	46424	30.09
Composite 1	B	28	9/26/2017 09:32:28	12.6	102.6	7.8	46393	30.07
Composite 1	C	28	9/26/2017 09:33:00	12.8	99.4	7.79	46418	30.09
Composite 1	D	28	9/26/2017 09:33:25	12.8	100.1	7.8	46408	30.09
Composite 1	E	28	9/26/2017 09:33:55	12.7	97	7.77	46419	30.09
Composite 2	A	28	9/26/2017 09:34:26	12.7	85.7	7.73	46451	30.11
Composite 2	B	28	9/26/2017 09:34:46	12.7	96	7.76	46426	30.09
Composite 2	C	28	9/26/2017 09:35:09	12.7	98.2	7.78	46415	30.09
Composite 2	D	28	9/26/2017 09:35:42	12.6	99.9	7.8	46420	30.09
Composite 2	E	28	9/26/2017 09:36:02	12.6	90.5	7.77	46417	30.09
Composite 3	A	28	9/26/2017 09:36:27	12.6	95.9	7.77	46443	30.1
Composite 3	B	28	9/26/2017 09:36:44	12.6	93.9	7.76	46428	30.09
Composite 3	C	28	9/26/2017 09:37:26	12.6	97.2	7.78	46492	30.14
Composite 3	D	28	9/26/2017 09:38:09	12.6	96.4	7.78	46502	30.15
Composite 3	E	28	9/26/2017 09:38:45	12.7	102	7.83	46485	30.14
Composite 4	A	28	9/26/2017 09:39:00	12.8	100.9	7.83	46418	30.09
Composite 4	B	28	9/26/2017 09:39:23	12.8	99.5	7.82	46421	30.1
Composite 4	C	28	9/26/2017 09:39:43	12.9	91.4	7.79	46402	30.08
Composite 4	D	28	9/26/2017 09:40:12	12.8	93.5	7.78	46441	30.11
Composite 4	E	28	9/26/2017 09:40:31	12.7	101.1	7.82	46438	30.1
Composite 5	A	28	9/26/2017 09:41:02	12.7	89	7.78	46467	30.13
Composite 5	B	28	9/26/2017 09:41:20	12.7	94.9	7.77	46444	30.11
Composite 5	C	28	9/26/2017 09:41:43	12.7	99.6	7.83	46490	30.14
Composite 5	D	28	9/26/2017 09:42:08	12.7	93.3	7.79	46469	30.13
Composite 5	E	28	9/26/2017 09:42:32	12.7	96.6	7.81	46462	30.12
Composite 6	A	28	9/26/2017 09:42:54	12.6	85.9	7.73	46479	30.13
Composite 6	B	28	9/26/2017 09:43:44	12.4	99.9	7.78	46495	30.13
Composite 6	C	28	9/26/2017 09:44:02	12.3	99.3	7.79	46477	30.12
Composite 6	D	28	9/26/2017 09:44:25	12.2	99.3	7.79	46456	30.1
Composite 6	E	28	9/26/2017 09:44:39	12.1	99.7	7.81	46466	30.1
Composite 7	A	28	9/26/2017 09:45:02	12	97.7	7.79	46468	30.1
Composite 7	B	28	9/26/2017 09:45:25	11.9	99.3	7.79	46496	30.11
Composite 7	C	28	9/26/2017 09:46:07	11.9	100.2	7.8	46496	30.11
Composite 7	D	28	9/26/2017 09:46:27	12.1	96.8	7.77	46467	30.1
Composite 7	E	28	9/26/2017 09:46:45	12.1	99.2	7.79	46434	30.08
Composite 8	A	28	9/26/2017 09:47:06	12.1	99.8	7.81	46509	30.13
Composite 8	B	28	9/26/2017 09:47:31	12.1	94.2	7.77	46468	30.1
Composite 8	C	28	9/26/2017 09:47:55	12.1	99.7	7.8	46507	30.13
Composite 8	D	28	9/26/2017 09:48:25	12.4	95.7	7.78	46421	30.08
Composite 8	E	28	9/26/2017 09:48:43	12.4	93	7.76	46462	30.11

Macoma nasuta Day 28 Recovery Record

DATE: 09/26/17

ESI STUDY: 29524

CLIENT: AECOM

PROJECT: New Haven

SAMPLE ID	REP	# LIVE	Initials	SAMPLE ID	REP	# LIVE	Initials
Laboratory Control Sediment	A	29	DD	Composite 2	A	29	DD
Laboratory Control Sediment	B	29	BG	Composite 2	B	29	BG
Laboratory Control Sediment	C	30	JTP	Composite 2	C	30	JTP
Laboratory Control Sediment	D	29	JTP	Composite 2	D	29	DD
Laboratory Control Sediment	E	29	BG	Composite 2	E	30	JTP
CLDS Reference Sediment	A	30	DD	Composite 3	A	29	BG
CLDS Reference Sediment	B	29	JTP	Composite 3	B	30	DD
CLDS Reference Sediment	C	30	BG	Composite 3	C	30	JTP
CLDS Reference Sediment	D	30	DD	Composite 3	D	29	DD
CLDS Reference Sediment	E	30	JTP	Composite 3	E	29	BG
Composite 1	A	30	BG	Composite 4	A	30	JTP
Composite 1	B	29	DD	Composite 4	B	30	BG
Composite 1	C	28	JTP	Composite 4	C	30	JTP
Composite 1	D	30	BG	Composite 4	D	28	DD
Composite 1	E	29	JTP	Composite 4	E	30	JTP

Macoma nasuta Day 28 Recovery Record

DATE: 09/26/17

ESI STUDY: 29524

CLIENT: AECOM

PROJECT: New Haven

SAMPLE ID	REP	# LIVE	Initials	SAMPLE ID	REP	# LIVE	Initials
Composite 5	A	29	DD	Composite 7	A	29	JTP
Composite 5	B	30	JTP	Composite 7	B	30	BG
Composite 5	C	30	JTP	Composite 7	C	30	JTP
Composite 5	D	30	DD	Composite 7	D	29	BG
Composite 5	E	28	JTP	Composite 7	E	30	JTP
Composite 6	A	28	BG	Composite 8	A	30	DD
Composite 6	B	30	DD	Composite 8	B	28	JTP
Composite 6	C	30	JTP	Composite 8	C	29	BG
Composite 6	D	30	BG	Composite 8	D	29	DD
Composite 6	E	30	DD	Composite 8	E	28	JTP

28 day *Macoma nasuta*
Sediment Bioaccumulation Evaluation

Statistical Analysis Reports

Survival

CETIS Test Data Worksheet

Report Date: 28 Sep-17 10:11 (p 1 of 2)
Test Code/ID: 02-7548-0737/29524Mn

Bioaccumulation Evaluation - Survival Endpoint					EnviroSystems, Inc.
Start Date:	29 Aug-17	Species:	Macoma nasuta	Sample Code:	29524-000
End Date:	26 Sep-17	Protocol:	US ACE NED RIM (2004)	Sample Source:	New Haven Harbor FNP -2017
Sample Date:	29 Aug-17	Material:	Laboratory Control Sediment	Sample Station:	Laboratory Control - 29524
Sample	Rep	Pos	# Exposed	# Survived	Notes
29524-000	1	3	30	29	
29524-000	2	13	30	29	
29524-000	3	27	30	30	
29524-000	4	33	30	29	
29524-000	5	45	30	29	
29517-009	1	1	30	30	
29517-009	2	17	30	29	
29517-009	3	21	30	30	
29517-009	4	31	30	30	
29517-009	5	46	30	30	
29517-001	1	4	30	30	
29517-001	2	19	30	29	
29517-001	3	23	30	28	
29517-001	4	39	30	30	
29517-001	5	43	30	29	
29517-002	1	8	30	29	
29517-002	2	12	30	29	
29517-002	3	29	30	30	
29517-002	4	38	30	29	
29517-002	5	41	30	30	
29517-003	1	10	30	29	
29517-003	2	15	30	30	
29517-003	3	28	30	30	
29517-003	4	35	30	29	
29517-003	5	47	30	29	
29517-004	1	7	30	30	
29517-004	2	11	30	30	
29517-004	3	25	30	30	
29517-004	4	40	30	28	
29517-004	5	48	30	30	
29517-005	1	2	30	29	
29517-005	2	16	30	30	
29517-005	3	30	30	30	
29517-005	4	34	30	30	
29517-005	5	44	30	28	
29517-006	1	6	30	28	
29517-006	2	20	30	30	
29517-006	3	24	30	30	
29517-006	4	37	30	30	
29517-006	5	49	30	30	
59517-007	1	9	30	29	
59517-007	2	18	30	30	
59517-007	3	22	30	30	
59517-007	4	36	30	29	
59517-007	5	50	30	30	
29517-008	1	5	30	30	
29517-008	2	14	30	28	

CETIS Test Data Worksheet

Report Date: 28 Sep-17 10:11 (p 2 of 2)
Test Code/ID: 02-7548-0737/29524Mn

Sample	Rep	Pos	# Exposed	# Survived	Notes
29517-008	3	26	30	29	
29517-008	4	32	30	29	
29517-008	5	42	30	28	

CETIS Summary Report

Report Date: 29 Sep-17 10:02 (p 1 of 2)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint						EnviroSystems, Inc.					
Batch ID:	09-7543-6973		Test Type:	Survival			Analyst:	Nancy Roka			
Start Date:	29 Aug-17		Protocol:	US ACE NED RIM (2004)			Diluent:	Not Applicable			
Ending Date:	26 Sep-17		Species:	Macoma nasuta			Brine:	Not Applicable			
Duration:	28d 0h		Source:	ARO - Aquatic Research Organisms, NH			Age:				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29524-000	12-6247-7143	29 Aug-17	29 Aug-17	n/a	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h							
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29524-000	Laboratory Control Sediment	New Haven Harbor FNP -2017	Laboratory Control - 29524								
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)								
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)								
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)								
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)								
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)								
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)								
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Single Comparison Summary											
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result							
04-9963-3410	Proportion Survived	Equal Variance t Two-Sample Test	0.9667	29517-009 passed proportion survived							
15-7906-0925	Proportion Survived	Equal Variance t Two-Sample Test	0.0978	29517-001 passed proportion survived							
14-0107-5896	Proportion Survived	Equal Variance t Two-Sample Test	0.1208	29517-002 passed proportion survived							
03-5683-8309	Proportion Survived	Equal Variance t Two-Sample Test	0.1208	29517-003 passed proportion survived							
07-5877-9843	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29517-004 passed proportion survived							
18-1139-8433	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-004 passed proportion survived							
17-1715-6272	Proportion Survived	Equal Variance t Two-Sample Test	0.2046	29517-005 passed proportion survived							
01-0925-9554	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-006 passed proportion survived							
01-6618-3624	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29517-006 passed proportion survived							
15-2156-9727	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	59517-007 passed proportion survived							
10-8645-0317	Proportion Survived	Equal Variance t Two-Sample Test	0.0226	29517-008 failed proportion survived							
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29524-000	LC	5	0.973	0.955	0.992	0.967	1.000	0.007	0.015	1.53%	0.00%
29517-009	RS	5	0.993	0.975	1.000	0.967	1.000	0.007	0.015	1.50%	-2.05%
29517-001		5	0.973	0.939	1.000	0.933	1.000	0.013	0.028	2.87%	0.00%
29517-002		5	0.980	0.957	1.000	0.967	1.000	0.008	0.018	1.86%	-0.68%
29517-003		5	0.980	0.957	1.000	0.967	1.000	0.008	0.018	1.86%	-0.68%
29517-004		5	0.987	0.950	1.000	0.933	1.000	0.013	0.030	3.02%	-1.37%
29517-005		5	0.980	0.943	1.000	0.933	1.000	0.013	0.030	3.04%	-0.68%
29517-006		5	0.987	0.950	1.000	0.933	1.000	0.013	0.030	3.02%	-1.37%
59517-007		5	0.987	0.964	1.000	0.967	1.000	0.008	0.018	1.85%	-1.37%
29517-008		5	0.960	0.925	0.995	0.933	1.000	0.013	0.028	2.91%	1.37%

CETIS Summary Report

Report Date: 29 Sep-17 10:02 (p 2 of 2)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint						EnviroSystems, Inc.
Proportion Survived Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC	0.967	0.967	1.000	0.967	0.967
29517-009	RS	1.000	0.967	1.000	1.000	1.000
29517-001		1.000	0.967	0.933	1.000	0.967
29517-002		0.967	0.967	1.000	0.967	1.000
29517-003		0.967	1.000	1.000	0.967	0.967
29517-004		1.000	1.000	1.000	0.933	1.000
29517-005		0.967	1.000	1.000	1.000	0.933
29517-006		0.933	1.000	1.000	1.000	1.000
59517-007		0.967	1.000	1.000	0.967	1.000
29517-008		1.000	0.933	0.967	0.967	0.933

CETIS Analytical Report

Report Date: 29 Sep-17 10:02 (p 1 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 04-9963-3410		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 28 Sep-17 10:12		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29524-000	12-6247-7143	29 Aug-17	29 Aug-17	n/a	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29524-000	Laboratory Control Sediment		New Haven Harbor FNP -2017			Laboratory Control - 29524					
29517-009	Marine Sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Angular (Corrected)		C > T				29517-009 passed proportion survived				1.88%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Reference Sed	-2.12	1.86	0.049	8	CDF	0.9667	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.9	2.29	0.3527	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0076490		0.0076490		1	4.5	0.0667	Non-Significant Effect		
Error		0.0135983		0.0016998		8					
Total		0.0212473				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1	23.2	1.0000	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.901	0.741	0.2226	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29524-000	LC	5	0.973	0.955	0.992	0.967	0.967	1.000	0.007	1.53%	0.00%
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	-2.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29524-000	LC	5	1.41	1.35	1.46	1.39	1.39	1.48	0.0184	2.93%	0.00%
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	-3.94%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29524-000	LC	0.967	0.967	1.000	0.967	0.967					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29524-000	LC	1.39	1.39	1.48	1.39	1.39					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					

CETIS Analytical Report

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Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 15-7906-0925		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 9:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-001 passed proportion survived			2.51%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.41	1.86	0.069	8	CDF	0.0978	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.79	2.29	0.5166	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0068609		0.0068609		1	1.99	0.1956	Non-Significant Effect		
Error		0.0275292		0.0034412		8					
Total		0.0343901				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.05	23.2	0.3057	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.911	0.741	0.2880	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-001		5	0.973	0.939	1.000	0.967	0.933	1.000	0.013	2.87%	2.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-001		5	1.41	1.32	1.5	1.39	1.31	1.48	0.0322	5.11%	3.59%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-001		1.000	0.967	0.933	1.000	0.967					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-001		1.48	1.39	1.31	1.48	1.39					

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Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 14-0107-5896		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-002 passed proportion survived			2.01%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.26	1.86	0.054	8	CDF	0.1208	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.7	2.29	0.6884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0033996		0.0033996		1	1.6	0.2415	Non-Significant Effect		
Error		0.0169979		0.0021247		8					
Total		0.0203974				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.5	23.2	0.7040	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.89	0.741	0.1713	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-002		5	0.980	0.957	1.000	0.967	0.967	1.000	0.008	1.86%	1.34%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-002		5	1.42	1.36	1.49	1.39	1.39	1.48	0.0226	3.55%	2.52%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-002		0.967	0.967	1.000	0.967	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-002		1.39	1.39	1.48	1.39	1.48					

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Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 03-5683-8309			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29517-003 passed proportion survived				2.01%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	1.26	1.86	0.054	8	CDF	0.1208	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.7	2.29	0.6884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0033996		0.0033996		1	1.6	0.2415	Non-Significant Effect		
Error		0.0169979		0.0021247		8					
Total		0.0203974				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.5	23.2	0.7040	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.89	0.741	0.1713	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-003		5	0.980	0.957	1.000	0.967	0.967	1.000	0.008	1.86%	1.34%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-003		5	1.42	1.36	1.49	1.39	1.39	1.48	0.0226	3.55%	2.52%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-003		0.967	1.000	1.000	0.967	0.967					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-003		1.39	1.48	1.48	1.39	1.39					

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Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 18-1139-8433		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Marine Sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-004	Marine Sediment		New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Angular (Corrected)		C > T				29517-004 passed proportion survived			2.62%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	27	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.36	2.29	0.0306	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006015		0.0006015		1	0.161	0.6986	Non-Significant Effect		
Error		0.0298493		0.0037312		8					
Total		0.0304508				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.39	23.2	0.2640	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.638	0.741	1.6E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000		0.967	1.000	0.007	1.50%	0.00%
29517-004		5	0.987	0.950	1.000		0.933	1.000	0.013	3.02%	0.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51		1.39	1.48	0.0184	2.82%	0.00%
29517-004		5	1.45	1.35	1.54		1.31	1.48	0.0339	5.25%	1.06%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-004		1.000	1.000	1.000	0.933	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS										
29517-004											

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Report Date: 29 Sep-17 10:02 (p 4 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 07-5877-9843		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h		AECOM		Dredged Sediment Evalu			
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Marine Sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-004	Marine Sediment		New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Angular (Corrected)		C > T				29517-004 passed proportion survived			1.56%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	22	n/a	1	7	Exact	0.5556	Non-Significant Effect		
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0007555		0.0007555		1	0.778	0.4071	Non-Significant Effect		
Error		0.0067992		0.0009713		7					
Total		0.0075546				8					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances			
Variances		Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-004		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-0.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-004		4	1.48	1.48	1.48	1.48	1.48	1.48	0	0.00%	-1.26%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-004		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-004		1.48	1.48	1.48	1.48						

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Report Date: 29 Sep-17 10:02 (p 5 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 17-1715-6272		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-005 passed proportion survived			2.64%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.871	1.86	0.073	8	CDF	0.2046	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.02	2.29	0.2152	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0028813		0.0028813		1	0.759	0.4092	Non-Significant Effect		
Error		0.030389		0.0037986		8					
Total		0.0332703				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.47	23.2	0.2555	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.828	0.741	0.0318	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-005		5	0.980	0.943	1.000	1.000	0.933	1.000	0.013	3.04%	1.34%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-005		5	1.43	1.33	1.52	1.48	1.31	1.48	0.0343	5.38%	2.32%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-005		0.967	1.000	1.000	1.000	0.933					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-005		1.39	1.48	1.48	1.48	1.31					

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Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 01-0925-9554		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-006 passed proportion survived			2.62%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	27	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.36	2.29	0.0306	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006015		0.0006015		1	0.161	0.6986	Non-Significant Effect			
Error	0.0298493		0.0037312		8						
Total	0.0304508				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.39	23.2	0.2640	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.638	0.741	1.6E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-006		5	0.987	0.950	1.000	1.000	0.933	1.000	0.013	3.02%	0.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-006		5	1.45	1.35	1.54	1.48	1.31	1.48	0.0339	5.25%	1.06%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-006		0.933	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-006		1.31	1.48	1.48	1.48	1.48					

CETIS Analytical Report

Report Date: 29 Sep-17 10:02 (p 7 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 01-6618-3624		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h		AECOM		Dredged Sediment Evalu			
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Marine Sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-006	Marine Sediment		New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Angular (Corrected)		C > T				29517-006 passed proportion survived			1.56%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	22	n/a	1	7	Exact	0.5556	Non-Significant Effect		
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0007555		0.0007555		1	0.778	0.4071	Non-Significant Effect		
Error		0.0067992		0.0009713		7					
Total		0.0075546				8					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances			
Variances		Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-006		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-0.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-006		4	1.48	1.48	1.48	1.48	1.48	1.48	0	0.00%	-1.26%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-006		Outlier	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-006		1.48	1.48	1.48	1.48						

CETIS Analytical Report

Report Date: 29 Sep-17 10:02 (p 8 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 15-2156-9727		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			59517-007 passed proportion survived			2.01%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.7	2.29	0.6884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0008499		0.0008499		1	0.4	0.5447	Non-Significant Effect		
Error		0.0169979		0.0021247		8					
Total		0.0178478				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.5	23.2	0.7040	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.759	0.741	0.0045	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
59517-007		5	0.987	0.964	1.000	1.000	0.967	1.000	0.008	1.85%	0.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
59517-007		5	1.44	1.38	1.51	1.48	1.39	1.48	0.0226	3.50%	1.26%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
59517-007		0.967	1.000	1.000	0.967	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
59517-007		1.39	1.48	1.48	1.39	1.48					

CETIS Analytical Report

Report Date: 29 Sep-17 10:02 (p 9 of 10)
Test Code: 29524Mn | 02-7548-0737

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 10-8645-0317		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:00		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-008 failed proportion survived			2.47%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.37	1.86	0.068	8	CDF	0.0226	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.93	2.29	0.3119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0186344		0.0186344		1	5.62	0.0452	Significant Effect		
Error		0.0265354		0.0033169		8					
Total		0.0451698				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.9	23.2	0.3266	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.833	0.741	0.0366	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.993	0.975	1.000	1.000	0.967	1.000	0.007	1.50%	0.00%
29517-008		5	0.960	0.925	0.995	0.967	0.933	1.000	0.013	2.91%	3.36%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.46	1.41	1.51	1.48	1.39	1.48	0.0184	2.82%	0.00%
29517-008		5	1.37	1.29	1.46	1.39	1.31	1.48	0.0314	5.11%	5.91%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.000	0.967	1.000	1.000	1.000					
29517-008		1.000	0.933	0.967	0.967	0.933					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.48	1.39	1.48	1.48	1.48					
29517-008		1.48	1.31	1.39	1.39	1.31					



Aquatic Research Organisms

DATA SHEET/ CUSTODY CHAIN 99NvAR0083117

I. Organism History

Species Neanthes (Neries) virens

Source: Lab reared _____ Hatchery reared _____ Field collected X

Hatch date Mixed aged adults Receipt date 8-31-17

Lot number _____ Strain Wild

Brood origination: Damariscotta River, Boothbay Harbor, Maine

II. Water Quality

Temperature 4 °C Salinity 28-32 ppt D.O. Saturated ppm

pH 8.0-8.4 su Hardness N.A. ppm Alkalinity N.A. ppm

III. Culture Conditions

Freshwater _____ Saltwater X Other _____

Recirculating _____ Flow through _____ Static _____

DIET: Flake food _____ Phytoplankton _____ Trout chow _____

Artemia _____ Rotifers _____ YCT _____ Other Not fed

Prophylactic treatments: _____

Comments: Held at 4C on moist seaweed. Shipped with gel ice packs to keep cool

IV. Shipping Information

Client: EST # of Organisms 1500

Carrier: _____ Date shipped 8-31-17

Tracking # _____ # of boxes _____

Released by: Mark Rosenberg Date: 8-31-17 Time: 9:15AM

Received by: _____ Date: _____ Time: _____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Nereis virens 28 Day Study # 29525 - AECOM New Haven

Day	Date	Water Qualities and Flow	Initial	Day	Date	Water Qualities and Flow	Initial
0	08/31/17	✓	MS	15	09/15/17	✓	JTP
1	09/01/17	✓	BG	16	09/16/17	✓	BG
2	09/02/17	✓	BG	17	09/17/17	✓	DD
3	09/03/17	✓	MS	18	09/18/17	✓	DD
4	09/04/17	✓	MS	19	09/19/17	✓	BG
5	09/05/17	✓	DD	20	09/20/17	✓	DD
6	09/06/17	✓	BG	21	09/21/17	✓	DD
7	09/07/17	✓	DD	22	09/22/17	✓	CFS
8	09/08/17	✓	BG	23	09/23/17	✓	BG
9	09/09/17	✓	BG	24	09/24/17	✓	DD
10	09/10/17	✓	DD	25	09/25/17	✓	DD
11	09/11/17	✓	DD	26	09/26/17	✓	BG
12	09/12/17	✓	BG	27	09/27/17	✓	DD
13	09/13/17	✓	DD	28	09/28/17	✓	JTP
14	09/14/17	✓	BG				

Notes: (E) BG 09/10/17 Rep 5D on day 01 DO₂ was below 2mg/L. Aeration had stopped overnight and was turned on once low DO₂ was observed.

Daily Flow Rates for *Nereis virens* - AECOM - New Haven

	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓	MS	✓	BG	✓	BG	✓	MS	✓	MS	✓	DD	✓	BG
Reference	✓		✓		✓		✓		✓		✓			
Comp 1	✓		✓		✓		✓		✓		✓			
Comp 2	✓		✓		✓		✓		✓		✓			
Comp 3	✓		✓		✓		✓		✓		✓			
	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓	MS	✓	BG	✓	BG	✓	MS	✓	MS	✓	DD	✓	BG
Comp 5	✓		✓		✓		✓		✓		✓			
Comp 6	✓		✓		✓		✓		✓		✓			
Comp 7	✓		✓		✓		✓		✓		✓			
Comp 8	✓		✓		✓		✓		✓		✓			
	Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓	DD	✓	BG	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Reference	✓		✓		✓		✓		✓		✓			
Comp 1	✓		✓		✓		✓		✓		✓			
Comp 2	✓		✓		✓		✓		✓		✓			
Comp 3	✓		✓		✓		✓		✓		✓			
	Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓	DD	✓	BG	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Comp 5	✓		✓		✓		✓		✓		✓			
Comp 6	✓		✓		✓		✓		✓		✓			
Comp 7	✓		✓		✓		✓		✓		✓			
Comp 8	✓		✓		✓		✓		✓		✓			

Assay Initiation Date 08/31/17

Assay Termination Date 09/28/17

Daily Flow Rates for *Nereis virens* - AECOM - New Haven

	Day 14		Day 15		Day 16		Day 17		Day 18		Day 19		Day 20	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	BG	✓	JTP	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 14		Day 15		Day 16		Day 17		Day 18		Day 19		Day 20	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓	BG	✓	JTP	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Comp 6	✓		✓		✓		✓		✓		✓		✓	
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	
	Day 21		Day 22		Day 23		Day 24		Day 25		Day 26		Day 27	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Lab Control	✓		✓		✓		✓		✓		✓		✓	
Reference	✓		✓		✓		✓		✓		✓		✓	
Comp 1	✓	DD	✓	CFS	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Comp 2	✓		✓		✓		✓		✓		✓		✓	
Comp 3	✓		✓		✓		✓		✓		✓		✓	
	Day 21		Day 22		Day 23		Day 24		Day 25		Day 26		Day 27	
SAMPLE	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials	Checked	Initials
Comp 4	✓		✓		✓		✓		✓		✓		✓	
Comp 5	✓	DD	✓	CFS	✓	BG	✓	DD	✓	DD	✓	BG	✓	DD
Comp 6	✓		✓		✓		✓		✓		✓		✓	
Comp 7	✓		✓		✓		✓		✓		✓		✓	
Comp 8	✓		✓		✓		✓		✓		✓		✓	

Assay Initiation Date 08/31/17

Assay Termination Date 09/28/17

Daily Observations for *Nereis virens* Study # 29525 - AECOM New Haven

TANK	DAY														
	Rep	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Laboratory Control	A	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	B	✓	IS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial	BG	BG	MS	MS	DD	DD	DD	BG	BG	DD	DD	BG	DD	DD	BG
Date	09/10/17	09/11/17	09/13/17	09/14/17	09/15/17	09/16/17	09/17/17	09/18/17	09/19/17	09/20/17	09/21/17	09/22/17	09/23/17	09/24/17	09/24/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Nereis virens* Study # 29525 - AECOM New Haven

TANK	DAY														
	Rep	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Composite 4	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial		BG	BG	MS	MS	DD	DD	DD	BG	BG	DD	DD	BG	DD	BG
Date		09/10/17	09/11/17	09/13/17	09/14/17	09/15/17	09/16/17	09/17/17	09/18/17	09/19/17	09/20/17	09/21/17	09/22/17	09/23/17	09/24/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Nereis virens* Study # 29525 - AECOM New Haven

TANK	DAY													
	Rep	15	16	17	18	19	20	21	22	23	24	25	26	27
Laboratory Control	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Control	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLDS Reference	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 1	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 2	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 3	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial		JTP	BB	DD	DD	BB	DD	DD	CFS	BB	DD	DD	BB	DD
Date		09/15/17	09/16/17	09/17/17	09/18/17	09/19/17	09/20/17	09/21/17	09/22/17	09/23/17	09/24/17	09/25/17	09/26/17	09/27/17

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

Daily Observations for *Nereis virens* Study # 29525 - AECOM New Haven

TANK	DAY													
	Rep	15	16	17	18	19	20	21	22	23	24	25	26	27
Composite 4	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 4	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 5	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 6	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 7	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite 8	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initial Date	JTP	BG	DD	DD	BG	DD	DD	DD	CF	BG	DD	DD	BG	DD
	09/15/17	09/16/17	09/17/17	09/18/17	09/19/17	09/20/17	09/21/17	09/22/17	09/23/17	09/24/17	09/25/17	09/26/17	09/27/17	

Observation Codes:

R animals replaced during the first 24 hours

D dead animals

S animals observed on the surface

✓ tank checked and no animals were on the surface or dead

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	00	8/31/2017 09:49:11	12.3	94.5	7.75	45301	29.27
Laboratory Control	B	00	8/31/2017 09:49:37	12.3	98.4	7.77	44941	29.01
Laboratory Control	C	00	8/31/2017 09:50:05	12.2	101.8	7.86	45402	29.34
Laboratory Control	D	00	8/31/2017 09:50:27	12.2	102.3	7.82	44869	28.96
Laboratory Control	E	00	8/31/2017 09:50:55	12.3	102.6	7.82	44851	28.95
CLDS Reference Site	A	00	8/31/2017 09:51:19	12.2	101.5	7.8	44882	28.97
CLDS Reference Site	B	00	8/31/2017 09:51:44	12.2	102.8	7.81	44978	29.04
CLDS Reference Site	C	00	8/31/2017 09:52:09	12.2	103.8	7.85	44911	28.99
CLDS Reference Site	D	00	8/31/2017 09:52:35	12.2	90.7	7.81	45339	29.29
CLDS Reference Site	E	00	8/31/2017 09:53:02	12.1	103.5	7.86	45301	29.27
Composite 1	A	00	8/31/2017 09:53:47	12.3	83.7	7.79	45428	29.36
Composite 1	B	00	8/31/2017 09:54:17	12.2	75.5	7.74	44908	28.99
Composite 1	C	00	8/31/2017 09:54:44	12.1	102.4	7.84	45330	29.29
Composite 1	D	00	8/31/2017 09:55:08	12.1	104.1	7.88	45045	29.08
Composite 1	E	00	8/31/2017 09:55:36	12.3	102.9	7.85	44981	29.04
Composite 2	A	00	8/31/2017 09:56:01	12.2	102.4	7.96	45152	29.16
Composite 2	B	00	8/31/2017 09:56:29	12.2	103.7	7.93	44309	28.56
Composite 2	C	00	8/31/2017 09:56:50	12.2	104	7.9	44943	29.01
Composite 2	D	00	8/31/2017 09:57:13	12.2	102.8	7.93	45394	29.33
Composite 2	E	00	8/31/2017 09:57:30	12.3	102.9	7.9	44983	29.04
Composite 3	A	00	8/31/2017 09:57:55	12.2	77.1	7.72	45097	29.12
Composite 3	B	00	8/31/2017 09:58:21	12.2	102.3	7.85	45380	29.32
Composite 3	C	00	8/31/2017 09:58:54	12.3	103	7.96	45085	29.12
Composite 3	D	00	8/31/2017 09:59:40	12.3	100.3	7.84	44837	28.94
Composite 3	E	00	8/31/2017 10:00:05	12.2	102.6	7.9	45224	29.22
Composite 4	A	00	8/31/2017 10:00:28	12.4	102.4	7.83	44741	28.87
Composite 4	B	00	8/31/2017 10:00:51	12.4	102.3	7.82	44894	28.98
Composite 4	C	00	8/31/2017 10:01:17	12.3	104	7.96	44980	29.04
Composite 4	D	00	8/31/2017 10:01:46	12.4	103.7	7.89	44741	28.87
Composite 4	E	00	8/31/2017 10:02:04	12.2	104.2	7.98	44834	28.94
Composite 5	A	00	8/31/2017 10:02:29	12.3	102.9	7.89	44996	29.05
Composite 5	B	00	8/31/2017 10:02:58	12.3	103.4	7.87	44972	29.04
Composite 5	C	00	8/31/2017 10:03:21	12.2	104.3	7.9	44977	29.04
Composite 5	D	00	8/31/2017 10:03:47	12.2	72.5	7.7	45187	29.18
Composite 5	E	00	8/31/2017 16:10:16	12.3	107.9	7.76	45362	29.32
Composite 6	A	00	8/31/2017 16:10:40	12.3	102.1	7.87	45159	29.17
Composite 6	B	00	8/31/2017 16:11:04	12.2	94	7.83	45166	29.17
Composite 6	C	00	8/31/2017 16:11:32	12.2	98.2	7.87	45142	29.16
Composite 6	D	00	8/31/2017 16:12:13	12.2	100.9	7.96	44900	28.98
Composite 6	E	00	8/31/2017 16:12:27	12.1	100.9	7.88	45214	29.2
Composite 7	A	00	8/31/2017 16:12:50	12	96.5	7.76	45145	29.15
Composite 7	B	00	8/31/2017 16:13:04	12	95.9	7.74	45231	29.21
Composite 7	C	00	8/31/2017 16:13:28	12.2	97.1	7.86	45146	29.16
Composite 7	D	00	8/31/2017 16:13:56	12.3	99.4	7.87	45262	29.24
Composite 7	E	00	8/31/2017 16:14:14	12.5	94.4	7.84	44891	28.99
Composite 8	A	00	8/31/2017 16:14:27	12.5	92.7	7.86	44856	28.96
Composite 8	B	00	8/31/2017 16:14:56	12.5	91	7.7	45265	29.25
Composite 8	C	00	8/31/2017 16:15:20	12.4	92.5	7.7	45267	29.25
Composite 8	D	00	8/31/2017 16:15:41	12.5	89.8	7.64	45039	29.09
Composite 8	E	00	8/31/2017 16:16:05	12.5	93.4	7.67	45144	29.17

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	01	9/1/2017 10:13:16	12.3	74.8	7.45	45601	29.49
Laboratory Control	B	01	9/1/2017 10:13:48	12.4	92.2	7.6	45492	29.41
Laboratory Control	C	01	9/1/2017 10:14:14	12.4	94	7.67	45506	29.42
Laboratory Control	D	01	9/1/2017 10:14:31	12.4	95.6	7.68	45468	29.39
Laboratory Control	E	01	9/1/2017 10:15:41	12.4	97.7	7.72	45480	29.4
CLDS Reference Site	A	01	9/1/2017 10:16:02	12.3	89	7.69	45477	29.4
CLDS Reference Site	B	01	9/1/2017 10:16:22	12.3	79.7	7.61	45588	29.48
CLDS Reference Site	C	01	9/1/2017 10:16:50	12.3	98.2	7.75	45484	29.4
CLDS Reference Site	D	01	9/1/2017 10:17:11	12.3	85.3	7.68	45570	29.46
CLDS Reference Site	E	01	9/1/2017 10:17:34	12.2	97.4	7.77	45772	29.61
Composite 1	A	01	9/1/2017 10:18:09	12.4	92.9	7.72	45471	29.4
Composite 1	B	01	9/1/2017 10:18:24	12.3	93.4	7.73	45505	29.42
Composite 1	C	01	9/1/2017 10:18:44	12.3	93.9	7.76	45739	29.58
Composite 1	D	01	9/1/2017 10:19:21	12.3	98.3	7.81	45481	29.4
Composite 1	E	01	9/1/2017 10:19:47	12.3	95.8	7.77	45474	29.4
Composite 2	A	01	9/1/2017 10:20:15	12.3	92.8	7.86	45688	29.55
Composite 2	B	01	9/1/2017 10:20:37	12.1	97.8	7.93	45711	29.56
Composite 2	C	01	9/1/2017 10:20:55	12.2	97.2	7.87	45470	29.39
Composite 2	D	01	9/1/2017 10:21:18	12.2	93.4	7.87	45891	29.69
Composite 2	E	01	9/1/2017 10:21:35	12.3	95.7	7.83	45469	29.39
Composite 3	A	01	9/1/2017 10:21:56	12.2	93.3	7.81	45547	29.45
Composite 3	B	01	9/1/2017 10:22:28	12.2	95.6	7.82	45779	29.61
Composite 3	C	01	9/1/2017 10:23:49	12.3	96.2	7.9	45652	29.52
Composite 3	D	01	9/1/2017 10:24:05	12.4	94.9	7.82	45430	29.37
Composite 3	E	01	9/1/2017 10:24:22	12.3	93.6	7.85	45654	29.52
Composite 4	A	01	9/1/2017 10:24:46	12.5	96.6	7.78	45452	29.39
Composite 4	B	01	9/1/2017 10:25:11	12.4	94.6	7.76	45436	29.37
Composite 4	C	01	9/1/2017 10:25:34	12.3	97.5	7.96	45394	29.34
Composite 4	D	01	9/1/2017 10:26:01	12.4	99	7.85	45442	29.38
Composite 4	E	01	9/1/2017 10:26:27	12.2	97.9	7.97	45285	29.26
Composite 5	A	01	9/1/2017 10:27:02	12.3	91.8	7.81	45477	29.4
Composite 5	B	01	9/1/2017 10:27:48	12.3	94.5	7.8	45473	29.4
Composite 5	C	01	9/1/2017 10:28:08	12.2	98.3	7.87	45475	29.39
Composite 5	D	01	9/1/2017 10:59:23	12.2	70.6	7.57	45861	29.67
Composite 5	E	01	9/1/2017 11:00:03	12.2	97.6	7.75	45572	29.46
Composite 6	A	01	9/1/2017 11:00:26	12.1	95.4	7.86	45650	29.51
Composite 6	B	01	9/1/2017 11:00:45	12.1	90.3	7.79	45624	29.5
Composite 6	C	01	9/1/2017 11:01:02	12.1	92.1	7.78	45591	29.47
Composite 6	D	01	9/1/2017 11:01:22	12	96.9	7.82	45551	29.44
Composite 6	E	01	9/1/2017 11:01:35	12	96.9	7.82	45614	29.48
Composite 7	A	01	9/1/2017 11:02:05	12	95.8	7.78	45594	29.47
Composite 7	B	01	9/1/2017 11:02:23	12.1	93.7	7.77	45610	29.49
Composite 7	C	01	9/1/2017 11:02:33	12.2	94.1	7.79	45598	29.48
Composite 7	D	01	9/1/2017 11:02:54	12.3	95.8	7.8	45584	29.48
Composite 7	E	01	9/1/2017 11:03:15	12.4	92.9	7.74	45542	29.45
Composite 8	A	01	9/1/2017 11:03:31	12.4	92.5	7.73	45524	29.44
Composite 8	B	01	9/1/2017 11:03:56	12.3	90.6	7.72	45583	29.48
Composite 8	C	01	9/1/2017 11:04:17	12.3	85.9	7.68	45657	29.53
Composite 8	D	01	9/1/2017 11:04:37	12.3	82.1	7.65	45535	29.44
Composite 8	E	01	9/1/2017 11:05:01	12.3	91	7.68	45545	29.45

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	02	9/2/2017 09:22:54	12.5	100.2	7.77	46478	30.12
Laboratory Control	B	02	9/2/2017 09:23:16	12.4	98.9	7.76	46464	30.11
Laboratory Control	C	02	9/2/2017 09:23:32	12.4	98.2	7.76	46463	30.11
Laboratory Control	D	02	9/2/2017 09:24:02	12.4	98.8	7.75	46463	30.11
Laboratory Control	E	02	9/2/2017 09:24:16	12.4	101	7.75	46459	30.11
CLDS Reference Site	A	02	9/2/2017 09:24:36	12.4	96.6	7.77	46441	30.09
CLDS Reference Site	B	02	9/2/2017 09:24:59	12.4	95.5	7.77	46429	30.08
CLDS Reference Site	C	02	9/2/2017 09:25:20	12.4	100	7.79	46456	30.1
CLDS Reference Site	D	02	9/2/2017 09:25:42	12.3	97	7.78	46384	30.05
CLDS Reference Site	E	02	9/2/2017 09:26:02	12.3	100.2	7.82	46507	30.14
Composite 1	A	02	9/2/2017 09:26:27	12.4	97.3	7.77	46503	30.14
Composite 1	B	02	9/2/2017 09:26:41	12.4	96.9	7.78	46378	30.05
Composite 1	C	02	9/2/2017 09:26:53	12.3	96.6	7.79	46428	30.08
Composite 1	D	02	9/2/2017 09:27:08	12.3	100.3	7.82	46456	30.1
Composite 1	E	02	9/2/2017 09:27:30	12.4	97.9	7.79	46427	30.08
Composite 2	A	02	9/2/2017 09:27:47	12.3	94.1	7.87	46324	30.01
Composite 2	B	02	9/2/2017 09:28:14	12.2	99.4	7.95	46347	30.02
Composite 2	C	02	9/2/2017 09:28:38	12.3	99.5	7.86	46485	30.12
Composite 2	D	02	9/2/2017 09:28:59	12.3	95.2	7.91	46487	30.12
Composite 2	E	02	9/2/2017 09:29:21	12.4	97.8	7.84	46433	30.09
Composite 3	A	02	9/2/2017 09:29:45	12.3	96.1	7.86	46173	29.9
Composite 3	B	02	9/2/2017 09:30:27	12.3	97.7	7.84	46418	30.08
Composite 3	C	02	9/2/2017 09:31:23	12.3	97.8	7.93	46255	29.96
Composite 3	D	02	9/2/2017 09:31:53	12.4	98	7.81	46486	30.13
Composite 3	E	02	9/2/2017 09:32:15	12.3	95.7	7.88	46226	29.94
Composite 4	A	02	9/2/2017 09:32:41	12.5	99.7	7.81	46505	30.14
Composite 4	B	02	9/2/2017 09:33:10	12.4	95.8	7.77	46448	30.1
Composite 4	C	02	9/2/2017 09:33:32	12.3	99.5	7.99	45949	29.74
Composite 4	D	02	9/2/2017 09:34:02	12.4	101.7	7.87	46526	30.16
Composite 4	E	02	9/2/2017 09:34:27	12.3	99.8	8.02	45892	29.69
Composite 5	A	02	9/2/2017 09:34:47	12.3	94.9	7.86	46386	30.05
Composite 5	B	02	9/2/2017 09:35:03	12.3	97.1	7.82	46506	30.14
Composite 5	C	02	9/2/2017 09:35:21	12.3	99.8	7.85	46489	30.12
Composite 5	D	02	9/2/2017 09:35:42	12.4	100.4	7.82	46548	30.17
Composite 5	E	02	9/2/2017 09:36:31	12.3	99	7.82	46525	30.15
Composite 6	A	02	9/2/2017 09:36:48	12.2	97	7.9	46402	30.06
Composite 6	B	02	9/2/2017 09:37:03	12.3	92.3	7.81	46475	30.11
Composite 6	C	02	9/2/2017 09:37:25	12.2	95.9	7.8	46476	30.11
Composite 6	D	02	9/2/2017 09:37:40	12.2	98.2	7.82	46480	30.11
Composite 6	E	02	9/2/2017 09:38:01	12.1	99.1	7.82	46483	30.11
Composite 7	A	02	9/2/2017 09:38:35	12.1	96.7	7.78	46527	30.14
Composite 7	B	02	9/2/2017 09:38:56	12.2	95.2	7.76	46509	30.13
Composite 7	C	02	9/2/2017 09:39:10	12.3	95.9	7.81	46433	30.08
Composite 7	D	02	9/2/2017 09:39:27	12.4	97.9	7.79	46525	30.15
Composite 7	E	02	9/2/2017 09:40:01	12.4	95.4	7.73	46531	30.16
Composite 8	A	02	9/2/2017 09:40:26	12.5	93.7	7.73	46486	30.13
Composite 8	B	02	9/2/2017 09:40:55	12.4	90.8	7.73	46373	30.05
Composite 8	C	02	9/2/2017 09:41:15	12.4	85.6	7.7	46367	30.04
Composite 8	D	02	9/2/2017 09:41:35	12.4	90	7.7	46451	30.1
Composite 8	E	02	9/2/2017 09:41:52	12.4	95.5	7.72	46523	30.15

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	03	9/3/2017 12:13:19	12.6	95.1	7.79	44609	28.79
Laboratory Control	B	03	9/3/2017 12:13:48	12.4	99.5	7.78	44610	28.78
Laboratory Control	C	03	9/3/2017 12:14:09	12.4	98.9	7.76	44610	28.78
Laboratory Control	D	03	9/3/2017 12:14:26	12.4	98.6	7.76	44622	28.79
Laboratory Control	E	03	9/3/2017 12:14:49	12.5	101.5	7.78	44621	28.79
CLDS Reference Site	A	03	9/3/2017 12:15:07	12.4	97.7	7.77	44614	28.78
CLDS Reference Site	B	03	9/3/2017 12:15:23	12.4	95.6	7.77	44615	28.78
CLDS Reference Site	C	03	9/3/2017 12:15:42	12.5	100.6	7.8	44622	28.79
CLDS Reference Site	D	03	9/3/2017 12:16:06	12.4	96.3	7.79	44599	28.77
CLDS Reference Site	E	03	9/3/2017 12:16:28	12.4	100.4	7.84	44696	28.84
Composite 1	A	03	9/3/2017 12:16:55	12.5	97.9	7.79	44614	28.79
Composite 1	B	03	9/3/2017 12:19:19	12.4	95.9	7.8	44611	28.78
Composite 1	C	03	9/3/2017 12:19:42	12.3	96	7.81	44618	28.78
Composite 1	D	03	9/3/2017 12:20:06	12.4	101.1	7.86	44635	28.8
Composite 1	E	03	9/3/2017 12:20:32	12.4	98.1	7.81	44638	28.8
Composite 2	A	03	9/3/2017 12:20:57	12.3	94.7	7.92	44456	28.67
Composite 2	B	03	9/3/2017 12:21:23	12.3	100.8	7.99	44579	28.76
Composite 2	C	03	9/3/2017 12:21:45	12.4	101	7.89	44645	28.81
Composite 2	D	03	9/3/2017 12:22:05	12.3	96.7	7.94	44666	28.82
Composite 2	E	03	9/3/2017 12:22:19	12.4	98.7	7.88	44637	28.8
Composite 3	A	03	9/3/2017 12:22:42	12.4	94	7.84	44367	28.61
Composite 3	B	03	9/3/2017 12:23:04	12.4	98.3	7.86	44600	28.77
Composite 3	C	03	9/3/2017 12:23:28	12.4	98.4	7.95	44423	28.65
Composite 3	D	03	9/3/2017 12:23:44	12.5	98.6	7.86	44640	28.8
Composite 3	E	03	9/3/2017 12:23:57	12.4	97.6	7.91	44422	28.64
Composite 4	A	03	9/3/2017 12:24:18	12.6	100.5	7.83	44645	28.81
Composite 4	B	03	9/3/2017 12:24:48	12.5	95.8	7.78	44612	28.78
Composite 4	C	03	9/3/2017 12:25:11	12.4	100.8	8.04	44100	28.42
Composite 4	D	03	9/3/2017 12:25:43	12.6	102.2	7.9	44646	28.81
Composite 4	E	03	9/3/2017 12:26:01	12.3	101	8.04	44024	28.36
Composite 5	A	03	9/3/2017 12:26:24	12.4	95.9	7.86	44632	28.8
Composite 5	B	03	9/3/2017 12:26:46	12.4	98	7.82	44654	28.81
Composite 5	C	03	9/3/2017 12:27:07	12.4	100.9	7.88	44662	28.82
Composite 5	D	03	9/3/2017 12:27:31	12.5	100.2	7.84	44663	28.82
Composite 5	E	03	9/3/2017 12:28:20	12.5	100.7	7.84	44667	28.83
Composite 6	A	03	9/3/2017 12:28:43	12.3	94.9	7.92	44615	28.78
Composite 6	B	03	9/3/2017 12:29:03	12.4	92	7.79	44660	28.82
Composite 6	C	03	9/3/2017 12:29:17	12.3	93.6	7.79	44680	28.83
Composite 6	D	03	9/3/2017 12:29:45	12.3	98.1	7.87	44687	28.83
Composite 6	E	03	9/3/2017 12:30:02	12.3	99.2	7.84	44679	28.83
Composite 7	A	03	9/3/2017 12:30:43	12.2	96.7	7.78	44703	28.84
Composite 7	B	03	9/3/2017 12:31:00	12.2	93.8	7.77	44726	28.86
Composite 7	C	03	9/3/2017 12:31:22	12.3	93.8	7.85	44631	28.79
Composite 7	D	03	9/3/2017 12:31:39	12.4	97.7	7.82	44689	28.84
Composite 7	E	03	9/3/2017 12:32:04	12.4	93.9	7.74	44695	28.84
Composite 8	A	03	9/3/2017 12:32:28	12.5	94.1	7.73	44666	28.83
Composite 8	B	03	9/3/2017 12:33:06	12.5	88.5	7.7	44635	28.8
Composite 8	C	03	9/3/2017 12:33:28	12.4	84.3	7.67	44639	28.8
Composite 8	D	03	9/3/2017 12:33:50	12.4	87.2	7.67	44652	28.81
Composite 8	E	03	9/3/2017 12:34:13	12.4	93.9	7.72	44667	28.82

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	04	9/4/2017 09:05:51	12.3	96.8	7.77	46065	29.82
Laboratory Control	B	04	9/4/2017 09:06:12	12.3	96.4	7.76	46049	29.81
Laboratory Control	C	04	9/4/2017 09:06:34	12.3	96	7.75	46042	29.8
Laboratory Control	D	04	9/4/2017 09:06:52	12.3	94	7.74	46044	29.81
Laboratory Control	E	04	9/4/2017 09:07:15	12.3	97.7	7.75	46060	29.82
CLDS Reference Site	A	04	9/4/2017 09:07:33	12.3	94.6	7.75	46026	29.79
CLDS Reference Site	B	04	9/4/2017 09:07:57	12.3	87.2	7.71	46027	29.79
CLDS Reference Site	C	04	9/4/2017 09:08:20	12.3	98.2	7.77	46048	29.81
CLDS Reference Site	D	04	9/4/2017 09:08:42	12.3	92.7	7.75	45944	29.73
CLDS Reference Site	E	04	9/4/2017 09:09:04	12.3	99.9	7.82	46007	29.78
Composite 1	A	04	9/4/2017 09:09:27	12.4	92.7	7.76	46043	29.81
Composite 1	B	04	9/4/2017 09:09:43	12.4	94.1	7.76	45981	29.76
Composite 1	C	04	9/4/2017 09:10:07	12.3	94.2	7.77	45927	29.72
Composite 1	D	04	9/4/2017 09:10:31	12.3	100.3	7.83	46013	29.78
Composite 1	E	04	9/4/2017 09:10:50	12.3	95.8	7.79	46028	29.8
Composite 2	A	04	9/4/2017 09:11:12	12.3	92.8	7.91	45704	29.56
Composite 2	B	04	9/4/2017 09:11:36	12.3	99.4	7.97	45890	29.69
Composite 2	C	04	9/4/2017 09:12:03	12.3	99.5	7.86	46047	29.81
Composite 2	D	04	9/4/2017 09:12:29	12.3	95.8	7.95	45953	29.74
Composite 2	E	04	9/4/2017 09:12:50	12.3	97	7.84	46029	29.8
Composite 3	A	04	9/4/2017 09:13:10	12.3	89.6	7.79	45669	29.54
Composite 3	B	04	9/4/2017 09:13:32	12.3	97	7.82	45907	29.71
Composite 3	C	04	9/4/2017 09:13:57	12.4	97	7.93	45695	29.56
Composite 3	D	04	9/4/2017 09:14:09	12.4	96.2	7.85	46041	29.81
Composite 3	E	04	9/4/2017 09:14:25	12.4	96.6	7.9	45690	29.55
Composite 4	A	04	9/4/2017 09:14:39	12.4	96.7	7.83	46044	29.81
Composite 4	B	04	9/4/2017 09:15:02	12.4	92.2	7.76	45998	29.78
Composite 4	C	04	9/4/2017 09:15:26	12.4	99.7	8.01	45312	29.28
Composite 4	D	04	9/4/2017 09:15:51	12.3	100.6	7.87	46057	29.82
Composite 4	E	04	9/4/2017 09:16:16	12.3	99.3	8.02	45244	29.23
Composite 5	A	04	9/4/2017 09:16:37	12.3	94.4	7.83	45990	29.77
Composite 5	B	04	9/4/2017 09:17:00	12.3	95.7	7.79	46039	29.8
Composite 5	C	04	9/4/2017 09:17:30	12.3	100.4	7.85	46021	29.79
Composite 5	D	04	9/4/2017 09:17:52	12.3	98.6	7.81	46053	29.81
Composite 5	E	04	9/4/2017 09:18:27	12.2	99	7.81	46104	29.85
Composite 6	A	04	9/4/2017 09:18:43	12.2	96.2	7.93	45803	29.63
Composite 6	B	04	9/4/2017 09:19:09	12.2	90	7.76	46062	29.81
Composite 6	C	04	9/4/2017 09:19:32	12.1	86.1	7.71	46021	29.78
Composite 6	D	04	9/4/2017 09:19:55	12.1	97.4	7.83	46008	29.77
Composite 6	E	04	9/4/2017 09:20:17	12.1	96.7	7.8	46043	29.79
Composite 7	A	04	9/4/2017 09:21:11	12	95.5	7.75	46070	29.81
Composite 7	B	04	9/4/2017 09:21:28	12.1	92.9	7.75	46009	29.77
Composite 7	C	04	9/4/2017 09:21:50	12.2	94.8	7.85	45901	29.7
Composite 7	D	04	9/4/2017 09:22:06	12.3	95.6	7.8	46040	29.8
Composite 7	E	04	9/4/2017 09:22:17	12.4	92.4	7.74	46023	29.79
Composite 8	A	04	9/4/2017 09:22:37	12.5	91.1	7.71	46017	29.79
Composite 8	B	04	9/4/2017 09:22:57	12.4	87.9	7.68	44778	28.9
Composite 8	C	04	9/4/2017 09:23:27	12.3	60.5	7.53	45906	29.71
Composite 8	D	04	9/4/2017 09:23:52	12.3	79.3	7.59	45955	29.74
Composite 8	E	04	9/4/2017 09:24:11	12.3	89	7.65	46001	29.78

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	05	9/5/2017 12:07:58	12.3	95.6	7.74	45961	29.74
Laboratory Control	B	05	9/5/2017 12:08:14	12.3	96	7.74	46028	29.79
Laboratory Control	C	05	9/5/2017 12:08:33	12.3	95.2	7.73	46041	29.8
Laboratory Control	D	05	9/5/2017 12:08:50	12.2	93.8	7.72	46084	29.83
Laboratory Control	E	05	9/5/2017 12:09:13	12.3	96.6	7.74	45972	29.75
CLDS Reference Site	A	05	9/5/2017 12:09:31	12.3	92.8	7.73	46079	29.83
CLDS Reference Site	B	05	9/5/2017 12:10:05	12.3	61.1	7.64	46181	29.9
CLDS Reference Site	C	05	9/5/2017 12:10:42	12.3	97.1	7.77	46028	29.79
CLDS Reference Site	D	05	9/5/2017 12:11:04	12.3	84.2	7.69	46355	30.03
CLDS Reference Site	E	05	9/5/2017 12:11:26	12.3	98.7	7.81	46464	30.1
Composite 1	A	05	9/5/2017 12:11:55	12.3	91	7.74	46008	29.78
Composite 1	B	05	9/5/2017 12:12:14	12.3	94.8	7.76	46235	29.94
Composite 1	C	05	9/5/2017 12:12:36	12.3	94.4	7.77	46368	30.04
Composite 1	D	05	9/5/2017 12:12:56	12.3	99.3	7.83	46153	29.88
Composite 1	E	05	9/5/2017 12:13:18	12.3	94.9	7.78	46104	29.85
Composite 2	A	05	9/5/2017 12:13:36	12.3	92.8	7.91	46159	29.89
Composite 2	B	05	9/5/2017 12:13:58	12.2	99.1	7.96	46328	30.01
Composite 2	C	05	9/5/2017 12:14:11	12.2	99.6	7.89	46048	29.81
Composite 2	D	05	9/5/2017 12:14:31	12.2	95.9	7.95	46445	30.09
Composite 2	E	05	9/5/2017 12:14:46	12.3	96.2	7.86	46081	29.83
Composite 3	A	05	9/5/2017 12:15:05	12.3	83.7	7.74	46155	29.88
Composite 3	B	05	9/5/2017 12:15:26	12.3	95.8	7.81	46340	30.02
Composite 3	C	05	9/5/2017 12:16:10	12.3	97.3	7.95	46204	29.92
Composite 3	D	05	9/5/2017 12:16:22	12.3	95.6	7.85	46024	29.79
Composite 3	E	05	9/5/2017 12:16:37	12.3	96	7.9	46185	29.91
Composite 4	A	05	9/5/2017 12:17:00	12.3	96.2	7.8	45960	29.74
Composite 4	B	05	9/5/2017 12:17:18	12.4	91.8	7.76	46100	29.85
Composite 4	C	05	9/5/2017 12:17:39	12.3	99.3	8.03	45820	29.65
Composite 4	D	05	9/5/2017 12:18:05	12.3	99.5	7.87	45973	29.75
Composite 4	E	05	9/5/2017 12:18:27	12.3	98.9	8.04	45747	29.59
Composite 5	A	05	9/5/2017 12:18:45	12.3	94.2	7.84	46193	29.91
Composite 5	B	05	9/5/2017 12:19:05	12.3	95.5	7.8	46099	29.84
Composite 5	C	05	9/5/2017 12:19:18	12.3	98.7	7.84	46153	29.88
Composite 5	D	05	9/5/2017 12:19:28	12.3	98.1	7.83	46010	29.78
Composite 5	E	05	9/5/2017 12:20:32	12.2	97.4	7.81	46042	29.8
Composite 6	A	05	9/5/2017 12:20:54	12.1	94.3	7.94	46438	30.08
Composite 6	B	05	9/5/2017 12:21:05	12.1	91.6	7.83	46112	29.85
Composite 6	C	05	9/5/2017 12:21:19	12	81.3	7.7	46468	30.1
Composite 6	D	05	9/5/2017 12:21:38	11.9	97.3	7.84	46325	29.99
Composite 6	E	05	9/5/2017 12:21:52	11.9	96.6	7.81	46130	29.85
Composite 7	A	05	9/5/2017 12:22:21	11.8	95.1	7.76	46111	29.83
Composite 7	B	05	9/5/2017 12:22:42	12	92.2	7.76	46435	30.07
Composite 7	C	05	9/5/2017 12:23:02	12.1	94.4	7.87	46394	30.05
Composite 7	D	05	9/5/2017 12:23:22	12.2	95.5	7.8	46130	29.86
Composite 7	E	05	9/5/2017 12:23:42	12.3	90	7.71	46241	29.95
Composite 8	A	05	9/5/2017 12:24:04	12.4	91	7.71	46173	29.9
Composite 8	B	05	9/5/2017 12:24:29	12.3	84.8	7.66	46242	29.95
Composite 8	C	05	9/5/2017 12:24:52	12.3	67.4	7.55	46358	30.03
Composite 8	D	05	9/5/2017 12:25:54	12.3	69.1	7.54	46382	30.05
Composite 8	E	05	9/5/2017 12:26:14	12.3	85.4	7.62	46229	29.94

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	06	9/6/2017 10:42:43	12.3	93.6	7.7	45211	29.21
Laboratory Control	B	06	9/6/2017 10:43:09	12.3	96.2	7.71	45209	29.2
Laboratory Control	C	06	9/6/2017 10:43:29	12.3	94.8	7.69	45189	29.19
Laboratory Control	D	06	9/6/2017 10:43:50	12.2	93.9	7.67	45242	29.23
Laboratory Control	E	06	9/6/2017 10:44:13	12.2	98.1	7.7	45191	29.19
CLDS Reference Site	A	06	9/6/2017 10:44:32	12.2	93.3	7.69	45249	29.23
CLDS Reference Site	B	06	9/6/2017 10:44:52	12.3	94.4	7.69	45223	29.21
CLDS Reference Site	C	06	9/6/2017 10:45:27	12.3	98.3	7.73	45180	29.19
CLDS Reference Site	D	06	9/6/2017 10:46:06	12.3	97.2	7.73	45196	29.2
CLDS Reference Site	E	06	9/6/2017 10:46:28	12.3	98.9	7.76	45464	29.39
Composite 1	A	06	9/6/2017 10:46:57	12.3	91.9	7.7	45194	29.2
Composite 1	B	06	9/6/2017 10:47:17	12.3	95.5	7.7	45227	29.22
Composite 1	C	06	9/6/2017 10:47:38	12.3	96.5	7.72	45256	29.24
Composite 1	D	06	9/6/2017 10:47:59	12.3	99.4	7.77	45245	29.23
Composite 1	E	06	9/6/2017 10:48:20	12.3	95.1	7.73	45269	29.25
Composite 2	A	06	9/6/2017 10:48:42	12.3	94.9	7.79	45333	29.29
Composite 2	B	06	9/6/2017 10:49:02	12.3	98.1	7.81	45264	29.24
Composite 2	C	06	9/6/2017 10:49:27	12.3	98.9	7.79	45229	29.22
Composite 2	D	06	9/6/2017 10:49:47	12.3	96.4	7.77	45309	29.28
Composite 2	E	06	9/6/2017 10:50:02	12.3	97	7.75	45213	29.21
Composite 3	A	06	9/6/2017 10:50:25	12.3	89.4	7.69	45352	29.31
Composite 3	B	06	9/6/2017 10:50:43	12.3	96.2	7.72	45245	29.23
Composite 3	C	06	9/6/2017 10:54:41	12.3	99.5	7.74	45291	29.27
Composite 3	D	06	9/6/2017 10:54:57	12.3	97.7	7.72	45228	29.22
Composite 3	E	06	9/6/2017 10:55:18	12.3	98	7.74	45226	29.22
Composite 4	A	06	9/6/2017 10:55:38	12.3	99.3	7.72	45149	29.16
Composite 4	B	06	9/6/2017 10:55:59	12.4	92.9	7.69	45294	29.27
Composite 4	C	06	9/6/2017 10:56:22	12.3	99.6	7.83	45281	29.26
Composite 4	D	06	9/6/2017 10:56:53	12.3	99.8	7.79	45182	29.19
Composite 4	E	06	9/6/2017 10:57:17	12.3	98.8	7.9	45272	29.25
Composite 5	A	06	9/6/2017 10:57:40	12.3	95.3	7.76	45311	29.28
Composite 5	B	06	9/6/2017 10:57:51	12.3	96.5	7.75	45238	29.23
Composite 5	C	06	9/6/2017 10:58:10	12.3	99.3	7.78	45348	29.3
Composite 5	D	06	9/6/2017 10:58:25	12.3	97.4	7.77	45210	29.21
Composite 5	E	06	9/6/2017 10:59:14	12.2	98.5	7.76	45211	29.2
Composite 6	A	06	9/6/2017 10:59:30	12.1	96.3	7.77	45388	29.33
Composite 6	B	06	9/6/2017 10:59:48	12.1	90.2	7.69	45290	29.26
Composite 6	C	06	9/6/2017 11:00:05	12.1	89	7.66	45312	29.27
Composite 6	D	06	9/6/2017 11:00:57	12	97.8	7.74	45272	29.24
Composite 6	E	06	9/6/2017 11:01:22	11.9	95.2	7.73	45313	29.27
Composite 7	A	06	9/6/2017 11:02:03	11.9	91.8	7.67	45246	29.22
Composite 7	B	06	9/6/2017 11:02:20	12	93.3	7.66	45257	29.23
Composite 7	C	06	9/6/2017 11:02:43	12.2	95.4	7.69	45266	29.24
Composite 7	D	06	9/6/2017 11:03:06	12.3	96	7.7	45286	29.26
Composite 7	E	06	9/6/2017 11:03:28	12.3	90.5	7.64	45233	29.22
Composite 8	A	06	9/6/2017 11:03:54	12.4	92.8	7.66	45223	29.22
Composite 8	B	06	9/6/2017 11:04:30	12.3	76.4	7.57	45262	29.25
Composite 8	C	06	9/6/2017 11:04:50	12.3	93.3	7.67	45483	29.4
Composite 8	D	06	9/6/2017 11:05:11	12.3	87.4	7.63	45242	29.23
Composite 8	E	06	9/6/2017 11:05:29	12.3	92.8	7.65	45212	29.21

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	07	9/7/2017 10:22:56	12.3	94.1	7.69	46664	30.25
Laboratory Control	B	07	9/7/2017 10:23:05	12.3	95	7.69	46724	30.3
Laboratory Control	C	07	9/7/2017 10:23:20	12.3	95.1	7.68	46719	30.29
Laboratory Control	D	07	9/7/2017 10:23:30	12.3	93.6	7.67	46714	30.29
Laboratory Control	E	07	9/7/2017 10:23:50	12.3	98.1	7.7	46728	30.3
CLDS Reference Site	A	07	9/7/2017 10:24:06	12.3	93.9	7.69	46712	30.29
CLDS Reference Site	B	07	9/7/2017 10:24:29	12.3	93.8	7.69	46737	30.3
CLDS Reference Site	C	07	9/7/2017 10:24:44	12.4	97.8	7.72	46752	30.32
CLDS Reference Site	D	07	9/7/2017 10:24:59	12.3	98.1	7.73	46738	30.31
CLDS Reference Site	E	07	9/7/2017 10:25:12	12.3	100	7.75	46753	30.32
Composite 1	A	07	9/7/2017 10:25:41	12.4	88.6	7.67	46712	30.29
Composite 1	B	07	9/7/2017 10:26:00	12.4	94.6	7.7	46709	30.29
Composite 1	C	07	9/7/2017 10:26:18	12.4	96.3	7.72	46713	30.29
Composite 1	D	07	9/7/2017 10:26:39	12.3	100.7	7.77	46724	30.3
Composite 1	E	07	9/7/2017 10:27:01	12.4	94.4	7.72	46742	30.31
Composite 2	A	07	9/7/2017 10:27:15	12.3	94.9	7.77	46607	30.21
Composite 2	B	07	9/7/2017 10:27:44	12.3	100	7.79	46512	30.14
Composite 2	C	07	9/7/2017 10:28:06	12.3	99.7	7.78	46743	30.31
Composite 2	D	07	9/7/2017 10:28:28	12.3	96.8	7.76	46718	30.29
Composite 2	E	07	9/7/2017 10:28:49	12.3	97.2	7.74	46741	30.31
Composite 3	A	07	9/7/2017 10:29:07	12.3	93.2	7.7	46695	30.27
Composite 3	B	07	9/7/2017 10:29:22	12.3	97	7.73	46740	30.31
Composite 3	C	07	9/7/2017 10:30:02	12.4	98.4	7.75	46737	30.31
Composite 3	D	07	9/7/2017 10:30:17	12.4	96.3	7.73	46756	30.32
Composite 3	E	07	9/7/2017 10:30:34	12.4	97.3	7.73	46741	30.31
Composite 4	A	07	9/7/2017 10:30:46	12.4	96.6	7.72	46781	30.34
Composite 4	B	07	9/7/2017 10:31:00	12.4	92.7	7.69	46680	30.27
Composite 4	C	07	9/7/2017 10:31:23	12.4	100.2	7.81	46630	30.23
Composite 4	D	07	9/7/2017 10:31:48	12.4	100.2	7.79	46757	30.32
Composite 4	E	07	9/7/2017 10:32:10	12.3	100.2	7.86	46589	30.2
Composite 5	A	07	9/7/2017 10:32:25	12.4	95.4	7.76	46764	30.33
Composite 5	B	07	9/7/2017 10:32:46	12.4	96.3	7.73	46784	30.34
Composite 5	C	07	9/7/2017 10:33:05	12.3	100.5	7.78	46757	30.32
Composite 5	D	07	9/7/2017 10:33:31	12.3	98.6	7.78	46566	30.18
Composite 5	E	07	9/7/2017 10:34:09	12.2	99.1	7.76	46766	30.32
Composite 6	A	07	9/7/2017 10:34:23	12.1	97	7.75	46742	30.3
Composite 6	B	07	9/7/2017 10:34:38	12.2	91.6	7.7	46757	30.31
Composite 6	C	07	9/7/2017 10:34:56	12.1	92.1	7.67	46744	30.3
Composite 6	D	07	9/7/2017 10:35:10	12	97.7	7.72	46754	30.3
Composite 6	E	07	9/7/2017 10:35:37	12	97.5	7.74	46743	30.29
Composite 7	A	07	9/7/2017 10:36:05	12	94.3	7.69	46807	30.34
Composite 7	B	07	9/7/2017 10:36:18	12.2	93.7	7.68	46769	30.32
Composite 7	C	07	9/7/2017 10:36:28	12.3	94.9	7.68	46725	30.29
Composite 7	D	07	9/7/2017 10:36:42	12.4	95.8	7.7	46757	30.32
Composite 7	E	07	9/7/2017 10:37:04	12.4	90.1	7.64	46768	30.33
Composite 8	A	07	9/7/2017 10:37:25	12.5	91.7	7.66	46753	30.32
Composite 8	B	07	9/7/2017 10:37:51	12.3	94.9	7.68	46720	30.29
Composite 8	C	07	9/7/2017 10:38:01	12.3	93.3	7.67	46729	30.3
Composite 8	D	07	9/7/2017 10:38:24	12.3	89.3	7.64	46774	30.33
Composite 8	E	07	9/7/2017 10:38:39	12.3	91.8	7.65	46724	30.29

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	08	9/8/2017 09:30:59	12.3	93.7	7.72	44968	29.03
Laboratory Control	B	08	9/8/2017 09:31:25	12.3	95.4	7.73	44781	28.9
Laboratory Control	C	08	9/8/2017 09:31:55	12.3	93.3	7.7	44810	28.92
Laboratory Control	D	08	9/8/2017 09:32:23	12.3	92.5	7.69	44856	28.95
Laboratory Control	E	08	9/8/2017 09:32:47	12.3	97.3	7.73	44804	28.92
CLDS Reference Site	A	08	9/8/2017 09:33:10	12.3	92	7.72	44797	28.91
CLDS Reference Site	B	08	9/8/2017 09:33:39	12.3	93.4	7.72	44791	28.91
CLDS Reference Site	C	08	9/8/2017 09:34:07	12.3	98.2	7.76	44752	28.88
CLDS Reference Site	D	08	9/8/2017 09:34:28	12.3	97.5	7.76	44754	28.88
CLDS Reference Site	E	08	9/8/2017 09:34:51	12.3	100.2	7.8	44915	29
Composite 1	A	08	9/8/2017 09:35:29	12.4	91.7	7.73	44868	28.97
Composite 1	B	08	9/8/2017 09:35:52	12.4	94.8	7.74	44836	28.94
Composite 1	C	08	9/8/2017 09:36:16	12.3	96.7	7.76	44899	28.99
Composite 1	D	08	9/8/2017 09:36:42	12.3	100	7.81	44804	28.92
Composite 1	E	08	9/8/2017 09:37:04	12.3	94.5	7.76	44833	28.94
Composite 2	A	08	9/8/2017 09:37:23	12.3	95.1	7.77	44900	28.99
Composite 2	B	08	9/8/2017 09:37:47	12.3	99.5	7.81	44869	28.96
Composite 2	C	08	9/8/2017 09:38:10	12.3	99.7	7.81	44820	28.93
Composite 2	D	08	9/8/2017 09:38:28	12.3	96.9	7.78	44864	28.96
Composite 2	E	08	9/8/2017 09:38:51	12.3	97	7.78	44774	28.9
Composite 3	A	08	9/8/2017 09:39:11	12.3	91	7.73	45027	29.08
Composite 3	B	08	9/8/2017 09:39:33	12.3	96.7	7.75	44865	28.96
Composite 3	C	08	9/8/2017 09:41:06	12.4	98.2	7.78	44814	28.93
Composite 3	D	08	9/8/2017 09:41:24	12.4	95.9	7.76	44776	28.9
Composite 3	E	08	9/8/2017 09:41:52	12.4	97.1	7.77	44821	28.93
Composite 4	A	08	9/8/2017 09:42:14	12.4	96.1	7.76	44729	28.86
Composite 4	B	08	9/8/2017 09:42:38	12.4	91	7.72	44896	28.99
Composite 4	C	08	9/8/2017 09:43:07	12.4	99.9	7.83	45142	29.16
Composite 4	D	08	9/8/2017 09:43:39	12.3	100.7	7.83	44840	28.94
Composite 4	E	08	9/8/2017 09:44:04	12.3	100.4	7.84	44926	29
Composite 5	A	08	9/8/2017 09:44:31	12.3	95.1	7.76	44727	28.86
Composite 5	B	08	9/8/2017 09:44:53	12.3	96.6	7.76	44692	28.84
Composite 5	C	08	9/8/2017 09:45:19	12.3	100.5	7.81	44866	28.96
Composite 5	D	08	9/8/2017 09:45:39	12.3	98.5	7.8	45141	29.16
Composite 5	E	08	9/8/2017 09:46:27	12.3	98.5	7.79	44817	28.93
Composite 6	A	08	9/8/2017 09:46:44	12.3	95.9	7.77	45088	29.12
Composite 6	B	08	9/8/2017 09:47:07	12.3	90.6	7.72	44948	29.02
Composite 6	C	08	9/8/2017 09:47:22	12.2	92.6	7.71	44880	28.97
Composite 6	D	08	9/8/2017 09:47:43	12.2	97.8	7.76	44975	29.03
Composite 6	E	08	9/8/2017 09:48:02	12.2	97.1	7.76	44950	29.01
Composite 7	A	08	9/8/2017 09:48:45	12.1	93.2	7.71	44873	28.96
Composite 7	B	08	9/8/2017 09:49:02	12.2	93.4	7.7	44855	28.95
Composite 7	C	08	9/8/2017 09:49:26	12.3	95.6	7.72	44895	28.98
Composite 7	D	08	9/8/2017 09:49:44	12.4	96.4	7.73	44882	28.98
Composite 7	E	08	9/8/2017 09:50:10	12.4	89.7	7.67	44869	28.97
Composite 8	A	08	9/8/2017 09:50:39	12.5	91.5	7.69	44810	28.93
Composite 8	B	08	9/8/2017 09:51:03	12.4	95.2	7.7	44891	28.98
Composite 8	C	08	9/8/2017 09:51:20	12.4	93.1	7.7	45158	29.17
Composite 8	D	08	9/8/2017 09:51:41	12.3	88.9	7.69	44776	28.9
Composite 8	E	08	9/8/2017 09:52:02	12.3	89.3	7.68	44949	29.02

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	09	9/9/2017 10:25:23	12.4	91.9	7.7	45122	29.15
Laboratory Control	B	09	9/9/2017 10:26:15	12.4	92.3	7.71	45103	29.13
Laboratory Control	C	09	9/9/2017 10:26:32	12.4	93.9	7.7	45104	29.14
Laboratory Control	D	09	9/9/2017 10:26:50	12.4	91.9	7.67	45123	29.15
Laboratory Control	E	09	9/9/2017 10:27:14	12.4	97.8	7.72	45125	29.15
CLDS Reference Site	A	09	9/9/2017 10:27:39	12.4	91.4	7.7	45118	29.15
CLDS Reference Site	B	09	9/9/2017 10:28:06	12.4	93.4	7.69	45124	29.15
CLDS Reference Site	C	09	9/9/2017 10:28:24	12.5	97.8	7.73	45126	29.15
CLDS Reference Site	D	09	9/9/2017 10:28:46	12.4	97.5	7.74	45119	29.15
CLDS Reference Site	E	09	9/9/2017 10:29:16	12.4	99.8	7.79	45142	29.16
Composite 1	A	09	9/9/2017 10:29:41	12.5	92.5	7.73	45140	29.16
Composite 1	B	09	9/9/2017 10:30:04	12.4	94.9	7.72	45123	29.15
Composite 1	C	09	9/9/2017 10:30:34	12.4	96.2	7.74	45127	29.15
Composite 1	D	09	9/9/2017 10:30:52	12.4	100	7.78	45133	29.16
Composite 1	E	09	9/9/2017 10:31:13	12.4	93.8	7.74	45131	29.16
Composite 2	A	09	9/9/2017 10:31:33	12.4	93.8	7.74	45143	29.16
Composite 2	B	09	9/9/2017 10:31:55	12.4	98.9	7.79	45147	29.16
Composite 2	C	09	9/9/2017 10:32:27	12.4	98.9	7.79	45138	29.16
Composite 2	D	09	9/9/2017 10:32:48	12.4	96.4	7.76	45141	29.16
Composite 2	E	09	9/9/2017 10:33:13	12.5	95.9	7.76	45142	29.16
Composite 3	A	09	9/9/2017 10:33:30	12.4	90.6	7.71	45218	29.22
Composite 3	B	09	9/9/2017 10:33:55	12.5	95.4	7.74	45145	29.17
Composite 3	C	09	9/9/2017 10:35:21	12.5	97.8	7.76	45147	29.17
Composite 3	D	09	9/9/2017 10:35:54	12.5	96.3	7.74	45139	29.16
Composite 3	E	09	9/9/2017 10:36:17	12.5	97.4	7.75	45142	29.17
Composite 4	A	09	9/9/2017 10:36:40	12.5	96.4	7.74	45149	29.17
Composite 4	B	09	9/9/2017 10:37:00	12.5	91	7.7	45132	29.16
Composite 4	C	09	9/9/2017 10:37:23	12.4	100	7.79	45356	29.32
Composite 4	D	09	9/9/2017 10:37:49	12.4	100.4	7.82	45151	29.17
Composite 4	E	09	9/9/2017 10:38:12	12.4	99.9	7.82	45156	29.17
Composite 5	A	09	9/9/2017 10:38:38	12.5	95.2	7.74	45151	29.17
Composite 5	B	09	9/9/2017 10:39:05	12.5	96.7	7.74	45172	29.19
Composite 5	C	09	9/9/2017 10:39:22	12.4	100	7.78	45153	29.17
Composite 5	D	09	9/9/2017 10:39:40	12.4	98.1	7.78	45341	29.3
Composite 5	E	09	9/9/2017 10:40:26	12.4	98.9	7.78	45164	29.18
Composite 6	A	09	9/9/2017 10:40:44	12.3	96.4	7.75	45285	29.26
Composite 6	B	09	9/9/2017 10:41:08	12.3	91.9	7.71	45187	29.19
Composite 6	C	09	9/9/2017 10:41:30	12.3	92	7.68	45181	29.19
Composite 6	D	09	9/9/2017 10:41:50	12.2	97.4	7.73	45214	29.2
Composite 6	E	09	9/9/2017 10:42:12	12.1	97.2	7.75	45191	29.19
Composite 7	A	09	9/9/2017 10:42:57	12.1	93.7	7.69	45199	29.19
Composite 7	B	09	9/9/2017 10:43:26	12.2	92.7	7.67	45180	29.18
Composite 7	C	09	9/9/2017 10:43:55	12.3	94.7	7.7	45170	29.18
Composite 7	D	09	9/9/2017 10:44:10	12.4	96.9	7.71	45173	29.19
Composite 7	E	09	9/9/2017 10:44:29	12.5	91.1	7.66	45172	29.19
Composite 8	A	09	9/9/2017 10:44:49	12.6	90.9	7.66	45138	29.17
Composite 8	B	09	9/9/2017 10:45:15	12.5	93.4	7.67	45164	29.18
Composite 8	C	09	9/9/2017 10:45:38	12.4	93	7.67	45350	29.31
Composite 8	D	09	9/9/2017 10:46:01	12.5	85.5	7.64	45162	29.18
Composite 8	E	09	9/9/2017 10:46:21	12.4	88.3	7.65	45176	29.19

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	10	9/10/2017 11:23:07	12.5	97.6	7.73	46098	29.85
Laboratory Control	B	10	9/10/2017 11:23:32	12.5	98.8	7.73	46100	29.85
Laboratory Control	C	10	9/10/2017 11:23:53	12.5	94.1	7.69	46118	29.87
Laboratory Control	D	10	9/10/2017 11:24:08	12.5	94.8	7.69	46135	29.88
Laboratory Control	E	10	9/10/2017 11:24:44	12.5	99.2	7.74	46111	29.86
CLDS Reference Site	A	10	9/10/2017 11:25:02	12.4	94	7.7	46186	29.91
CLDS Reference Site	B	10	9/10/2017 11:25:15	12.6	96	7.71	46107	29.86
CLDS Reference Site	C	10	9/10/2017 11:25:35	12.5	99.9	7.75	46111	29.86
CLDS Reference Site	D	10	9/10/2017 11:25:50	12.4	98.8	7.76	46185	29.91
CLDS Reference Site	E	10	9/10/2017 11:26:09	12.5	100.1	7.79	46152	29.89
Composite 1	A	10	9/10/2017 11:26:50	12.6	93.3	7.72	46149	29.89
Composite 1	B	10	9/10/2017 11:27:02	12.5	95.9	7.73	46152	29.89
Composite 1	C	10	9/10/2017 11:27:14	12.5	97.8	7.75	46178	29.91
Composite 1	D	10	9/10/2017 11:27:30	12.5	100.8	7.79	46121	29.87
Composite 1	E	10	9/10/2017 11:27:48	12.5	96.2	7.75	46142	29.88
Composite 2	A	10	9/10/2017 11:28:03	12.5	96.3	7.75	46193	29.92
Composite 2	B	10	9/10/2017 11:28:49	12.5	99.8	7.81	46142	29.88
Composite 2	C	10	9/10/2017 11:29:04	12.5	100.3	7.82	46127	29.87
Composite 2	D	10	9/10/2017 11:29:18	12.4	98	7.78	46217	29.93
Composite 2	E	10	9/10/2017 11:29:30	12.5	98.1	7.78	46153	29.89
Composite 3	A	10	9/10/2017 11:29:45	12.4	94.5	7.74	46306	30
Composite 3	B	10	9/10/2017 11:30:00	12.5	97.7	7.76	46179	29.91
Composite 3	C	10	9/10/2017 11:30:59	12.5	98.9	7.78	46135	29.88
Composite 3	D	10	9/10/2017 11:31:13	12.6	98	7.77	46102	29.86
Composite 3	E	10	9/10/2017 11:31:27	12.6	98.1	7.77	46119	29.87
Composite 4	A	10	9/10/2017 11:31:39	12.6	98.6	7.77	46073	29.84
Composite 4	B	10	9/10/2017 11:31:56	12.5	93.2	7.72	46197	29.92
Composite 4	C	10	9/10/2017 11:32:16	12.5	100.2	7.8	46406	30.07
Composite 4	D	10	9/10/2017 11:33:12	12.4	100.9	7.84	46220	29.94
Composite 4	E	10	9/10/2017 11:33:28	12.5	100.1	7.83	46197	29.92
Composite 5	A	10	9/10/2017 11:33:50	12.6	96.1	7.76	46125	29.87
Composite 5	B	10	9/10/2017 11:34:02	12.6	98	7.76	46095	29.85
Composite 5	C	10	9/10/2017 11:34:14	12.5	100.3	7.79	46164	29.9
Composite 5	D	10	9/10/2017 11:34:29	12.4	98.2	7.78	46411	30.07
Composite 5	E	10	9/10/2017 11:35:26	12.4	99.8	7.79	46143	29.88
Composite 6	A	10	9/10/2017 11:35:48	12.3	95.9	7.75	46259	29.96
Composite 6	B	10	9/10/2017 11:36:04	12.4	93.1	7.72	46183	29.91
Composite 6	C	10	9/10/2017 11:36:25	12.2	88.1	7.65	46283	29.97
Composite 6	D	10	9/10/2017 11:36:38	12.3	97.2	7.72	46135	29.87
Composite 6	E	10	9/10/2017 11:37:00	12.2	98.3	7.74	46167	29.89
Composite 7	A	10	9/10/2017 11:38:05	12.1	94.6	7.7	46198	29.91
Composite 7	B	10	9/10/2017 11:38:23	12.3	94.3	7.69	46176	29.9
Composite 7	C	10	9/10/2017 11:38:46	12.4	95.6	7.71	46168	29.9
Composite 7	D	10	9/10/2017 11:39:03	12.5	97.5	7.73	46147	29.89
Composite 7	E	10	9/10/2017 11:39:20	12.6	93.2	7.69	46155	29.89
Composite 8	A	10	9/10/2017 11:39:35	12.6	93	7.69	46131	29.88
Composite 8	B	10	9/10/2017 11:40:26	12.6	95	7.71	46116	29.87
Composite 8	C	10	9/10/2017 11:40:35	12.5	93.6	7.7	46248	29.96
Composite 8	D	10	9/10/2017 11:40:55	12.6	90.4	7.68	46106	29.86
Composite 8	E	10	9/10/2017 11:41:14	12.5	91	7.69	46164	29.9

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	11	9/11/2017 10:23:31	12.4	94.6	7.75	45096	29.13
Laboratory Control	B	11	9/11/2017 10:23:47	12.4	96	7.75	45084	29.12
Laboratory Control	C	11	9/11/2017 10:24:05	12.4	94.3	7.73	45121	29.15
Laboratory Control	D	11	9/11/2017 10:24:17	12.4	93	7.72	45173	29.18
Laboratory Control	E	11	9/11/2017 10:24:56	12.4	96.8	7.75	45101	29.13
CLDS Reference Site	A	11	9/11/2017 10:25:13	12.4	93.8	7.74	45124	29.15
CLDS Reference Site	B	11	9/11/2017 10:25:28	12.4	93.8	7.74	45079	29.12
CLDS Reference Site	C	11	9/11/2017 10:25:45	12.4	97.4	7.77	45119	29.15
CLDS Reference Site	D	11	9/11/2017 10:26:02	12.4	97.3	7.77	45051	29.1
CLDS Reference Site	E	11	9/11/2017 10:26:19	12.4	98.6	7.8	45168	29.18
Composite 1	A	11	9/11/2017 10:27:02	12.5	91	7.73	45207	29.21
Composite 1	B	11	9/11/2017 10:27:24	12.5	94	7.73	45073	29.11
Composite 1	C	11	9/11/2017 10:27:37	12.4	95.9	7.75	45239	29.23
Composite 1	D	11	9/11/2017 10:27:50	12.4	99	7.8	45138	29.16
Composite 1	E	11	9/11/2017 10:28:05	12.4	94.4	7.76	45117	29.14
Composite 2	A	11	9/11/2017 10:28:25	12.4	95.2	7.76	45113	29.14
Composite 2	B	11	9/11/2017 10:29:17	12.4	98	7.82	45104	29.13
Composite 2	C	11	9/11/2017 10:29:41	12.4	98.6	7.82	45136	29.16
Composite 2	D	11	9/11/2017 10:29:59	12.4	96	7.79	45196	29.2
Composite 2	E	11	9/11/2017 10:30:15	12.4	96.4	7.79	45134	29.16
Composite 3	A	11	9/11/2017 10:30:31	12.4	95.1	7.76	45059	29.1
Composite 3	B	11	9/11/2017 10:30:45	12.4	96.3	7.77	45183	29.19
Composite 3	C	11	9/11/2017 10:31:49	12.5	96.9	7.79	45152	29.17
Composite 3	D	11	9/11/2017 10:32:08	12.5	95.4	7.77	45097	29.13
Composite 3	E	11	9/11/2017 10:32:27	12.5	95.7	7.77	45156	29.17
Composite 4	A	11	9/11/2017 10:32:49	12.5	95.7	7.77	45070	29.11
Composite 4	B	11	9/11/2017 10:33:13	12.5	90.8	7.73	45327	29.3
Composite 4	C	11	9/11/2017 10:33:35	12.5	98.3	7.8	45356	29.32
Composite 4	D	11	9/11/2017 10:34:31	12.4	98.7	7.83	45166	29.18
Composite 4	E	11	9/11/2017 10:34:55	12.4	98.2	7.83	45631	29.51
Composite 5	A	11	9/11/2017 10:35:19	12.4	94.8	7.76	45135	29.16
Composite 5	B	11	9/11/2017 10:35:34	12.4	96	7.77	45051	29.1
Composite 5	C	11	9/11/2017 10:35:55	12.4	98.7	7.81	45151	29.17
Composite 5	D	11	9/11/2017 10:36:08	12.4	96.8	7.79	45841	29.66
Composite 5	E	11	9/11/2017 10:37:06	12.3	97.7	7.8	45164	29.17
Composite 6	A	11	9/11/2017 10:37:24	12.3	95.3	7.77	45376	29.32
Composite 6	B	11	9/11/2017 10:37:37	12.3	92.1	7.73	45197	29.2
Composite 6	C	11	9/11/2017 10:37:50	12.2	92.4	7.72	45078	29.11
Composite 6	D	11	9/11/2017 10:38:05	12.2	96.4	7.75	45123	29.14
Composite 6	E	11	9/11/2017 10:38:23	12.1	96.3	7.76	45175	29.18
Composite 7	A	11	9/11/2017 10:38:57	12.1	92	7.71	45157	29.16
Composite 7	B	11	9/11/2017 10:39:07	12.3	92.4	7.71	45086	29.12
Composite 7	C	11	9/11/2017 10:39:18	12.4	93.5	7.71	45399	29.34
Composite 7	D	11	9/11/2017 10:39:36	12.4	95.9	7.74	45134	29.16
Composite 7	E	11	9/11/2017 10:39:49	12.5	91.4	7.7	45233	29.23
Composite 8	A	11	9/11/2017 10:39:59	12.5	90.8	7.7	45181	29.2
Composite 8	B	11	9/11/2017 10:40:52	12.4	92.4	7.72	45094	29.13
Composite 8	C	11	9/11/2017 10:41:01	12.4	91.2	7.7	45467	29.4
Composite 8	D	11	9/11/2017 10:41:15	12.4	87	7.69	45067	29.11
Composite 8	E	11	9/11/2017 10:41:26	12.4	88.2	7.7	45213	29.21

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	12	9/12/2017 09:18:50	12.4	96	7.77	44880	28.97
Laboratory Control	B	12	9/12/2017 09:19:08	12.4	97.4	7.78	44860	28.96
Laboratory Control	C	12	9/12/2017 09:19:31	12.4	96.1	7.76	44881	28.97
Laboratory Control	D	12	9/12/2017 09:19:54	12.4	94.6	7.76	44855	28.96
Laboratory Control	E	12	9/12/2017 09:20:14	12.4	99.4	7.78	44853	28.95
CLDS Reference Site	A	12	9/12/2017 09:20:35	12.4	93.6	7.77	44855	28.96
CLDS Reference Site	B	12	9/12/2017 09:20:53	12.4	95.7	7.78	44924	29.01
CLDS Reference Site	C	12	9/12/2017 09:21:16	12.4	99.9	7.8	44896	28.99
CLDS Reference Site	D	12	9/12/2017 09:21:41	12.4	98.8	7.8	44903	28.99
CLDS Reference Site	E	12	9/12/2017 09:22:05	12.4	100.9	7.82	44883	28.98
Composite 1	A	12	9/12/2017 09:22:31	12.5	93.5	7.77	44802	28.92
Composite 1	B	12	9/12/2017 09:22:55	12.4	95.4	7.78	44919	29
Composite 1	C	12	9/12/2017 09:23:15	12.4	97.6	7.78	44783	28.91
Composite 1	D	12	9/12/2017 09:23:38	12.4	100.4	7.82	44860	28.96
Composite 1	E	12	9/12/2017 09:23:59	12.4	95.4	7.8	44890	28.98
Composite 2	A	12	9/12/2017 09:24:20	12.4	96.9	7.8	44667	28.82
Composite 2	B	12	9/12/2017 09:24:45	12.4	100.9	7.82	44884	28.98
Composite 2	C	12	9/12/2017 09:25:12	12.4	99.9	7.83	44837	28.94
Composite 2	D	12	9/12/2017 09:26:21	12.4	95.7	7.8	44962	29.03
Composite 2	E	12	9/12/2017 09:26:45	12.4	98.9	7.81	44851	28.95
Composite 3	A	12	9/12/2017 09:27:02	12.5	96.6	7.79	44942	29.02
Composite 3	B	12	9/12/2017 09:27:22	12.4	98.1	7.8	44926	29.01
Composite 3	C	12	9/12/2017 09:30:06	12.5	99.6	7.81	44896	28.99
Composite 3	D	12	9/12/2017 09:30:56	12.5	98.2	7.8	44935	29.02
Composite 3	E	12	9/12/2017 09:31:19	12.5	96.8	7.79	44904	28.99
Composite 4	A	12	9/12/2017 09:31:43	12.5	97.4	7.8	44983	29.05
Composite 4	B	12	9/12/2017 09:31:59	12.5	94.9	7.78	44836	28.95
Composite 4	C	12	9/12/2017 09:32:18	12.5	100.9	7.81	44831	28.94
Composite 4	D	12	9/12/2017 09:32:45	12.4	100.2	7.83	44884	28.98
Composite 4	E	12	9/12/2017 09:33:11	12.4	101	7.83	44807	28.92
Composite 5	A	12	9/12/2017 09:33:33	12.5	96.9	7.79	44982	29.05
Composite 5	B	12	9/12/2017 09:33:50	12.5	98	7.8	44990	29.06
Composite 5	C	12	9/12/2017 09:34:05	12.4	101.4	7.82	44923	29.01
Composite 5	D	12	9/12/2017 09:34:27	12.4	99.2	7.8	44972	29.04
Composite 5	E	12	9/12/2017 09:35:14	12.3	100.5	7.8	44889	28.98
Composite 6	A	12	9/12/2017 09:35:29	12.3	98.5	7.78	44848	28.95
Composite 6	B	12	9/12/2017 09:35:48	12.3	94	7.75	44919	29
Composite 6	C	12	9/12/2017 09:36:17	12.3	92.9	7.74	44967	29.03
Composite 6	D	12	9/12/2017 09:36:35	12.2	98.9	7.77	44979	29.04
Composite 6	E	12	9/12/2017 09:37:00	12.2	99.2	7.79	44963	29.03
Composite 7	A	12	9/12/2017 09:37:44	12.2	94.8	7.75	44984	29.04
Composite 7	B	12	9/12/2017 09:38:01	12.3	94.9	7.73	44984	29.04
Composite 7	C	12	9/12/2017 09:38:16	12.3	95.6	7.74	44911	28.99
Composite 7	D	12	9/12/2017 09:38:36	12.4	98.4	7.76	44964	29.04
Composite 7	E	12	9/12/2017 09:38:51	12.5	93.4	7.74	44937	29.02
Composite 8	A	12	9/12/2017 09:39:14	12.5	93.7	7.74	44920	29.01
Composite 8	B	12	9/12/2017 09:39:41	12.5	94.2	7.75	44977	29.05
Composite 8	C	12	9/12/2017 09:39:55	12.5	93	7.74	44808	28.93
Composite 8	D	12	9/12/2017 09:40:14	12.5	87.5	7.74	44999	29.06
Composite 8	E	12	9/12/2017 09:40:39	12.4	92	7.74	44887	28.98

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	13	9/13/2017 09:34:02	12.5	91.9	7.82	46302	30
Laboratory Control	B	13	9/13/2017 09:34:20	12.5	94.1	7.83	46306	30
Laboratory Control	C	13	9/13/2017 09:34:41	12.4	93.5	7.82	46291	29.99
Laboratory Control	D	13	9/13/2017 09:34:58	12.4	91.5	7.82	46297	29.99
Laboratory Control	E	13	9/13/2017 09:35:34	12.4	95.7	7.83	46309	30
CLDS Reference Site	A	13	9/13/2017 09:35:50	12.4	92.3	7.82	46293	29.99
CLDS Reference Site	B	13	9/13/2017 09:36:03	12.5	91.8	7.82	46357	30.04
CLDS Reference Site	C	13	9/13/2017 09:36:20	12.4	96.8	7.85	46303	30
CLDS Reference Site	D	13	9/13/2017 09:36:37	12.5	95.8	7.85	46328	30.02
CLDS Reference Site	E	13	9/13/2017 09:36:53	12.4	98.1	7.86	46275	29.98
Composite 1	A	13	9/13/2017 09:37:19	12.5	90	7.82	46246	29.96
Composite 1	B	13	9/13/2017 09:37:37	12.5	93.3	7.83	46333	30.02
Composite 1	C	13	9/13/2017 09:37:50	12.4	95.1	7.83	46197	29.92
Composite 1	D	13	9/13/2017 09:38:10	12.4	98.3	7.86	46292	29.99
Composite 1	E	13	9/13/2017 09:38:28	12.5	92.3	7.84	46319	30.01
Composite 2	A	13	9/13/2017 09:38:47	12.5	93.9	7.84	46309	30
Composite 2	B	13	9/13/2017 09:40:05	12.4	97.8	7.87	46331	30.02
Composite 2	C	13	9/13/2017 09:40:29	12.4	98.1	7.87	46310	30
Composite 2	D	13	9/13/2017 09:40:56	12.4	95.4	7.85	46355	30.03
Composite 2	E	13	9/13/2017 09:41:17	12.4	95.8	7.85	46273	29.97
Composite 3	A	13	9/13/2017 09:41:38	12.5	93.9	7.84	46329	30.02
Composite 3	B	13	9/13/2017 09:41:59	12.5	95	7.84	46341	30.03
Composite 3	C	13	9/13/2017 09:44:20	12.5	96.7	7.85	46271	29.98
Composite 3	D	13	9/13/2017 09:44:41	12.5	94.6	7.85	46341	30.03
Composite 3	E	13	9/13/2017 09:44:59	12.5	95.7	7.84	46300	30
Composite 4	A	13	9/13/2017 09:45:23	12.5	95.4	7.85	46346	30.03
Composite 4	B	13	9/13/2017 09:45:41	12.5	91.3	7.81	46208	29.93
Composite 4	C	13	9/13/2017 09:46:06	12.5	98.2	7.85	46172	29.9
Composite 4	D	13	9/13/2017 09:46:57	12.4	98.5	7.87	46292	29.99
Composite 4	E	13	9/13/2017 09:47:27	12.4	98	7.85	45970	29.76
Composite 5	A	13	9/13/2017 09:48:04	12.5	93.9	7.82	46323	30.01
Composite 5	B	13	9/13/2017 09:48:17	12.5	95.2	7.84	46374	30.05
Composite 5	C	13	9/13/2017 09:48:33	12.5	98.2	7.85	46331	30.02
Composite 5	D	13	9/13/2017 09:48:51	12.4	96.7	7.82	45905	29.71
Composite 5	E	13	9/13/2017 09:49:58	12.4	97	7.85	46330	30.01
Composite 6	A	13	9/13/2017 09:50:17	12.3	95	7.8	45940	29.73
Composite 6	B	13	9/13/2017 09:50:33	12.3	90.9	7.79	46326	30.01
Composite 6	C	13	9/13/2017 09:50:48	12.3	91.1	7.78	46361	30.03
Composite 6	D	13	9/13/2017 09:51:10	12.2	96.5	7.82	46370	30.04
Composite 6	E	13	9/13/2017 09:51:26	12.2	95.6	7.82	46339	30.01
Composite 7	A	13	9/13/2017 09:52:17	12.1	92	7.78	46354	30.02
Composite 7	B	13	9/13/2017 09:52:29	12.2	92.5	7.78	46347	30.02
Composite 7	C	13	9/13/2017 09:52:45	12.3	93.5	7.77	46246	29.95
Composite 7	D	13	9/13/2017 09:52:55	12.4	94.6	7.78	46346	30.03
Composite 7	E	13	9/13/2017 09:53:11	12.5	89.2	7.76	46350	30.03
Composite 8	A	13	9/13/2017 09:53:22	12.5	90	7.78	46347	30.03
Composite 8	B	13	9/13/2017 09:53:53	12.5	90.4	7.8	46330	30.02
Composite 8	C	13	9/13/2017 09:54:11	12.4	82.3	7.75	46136	29.88
Composite 8	D	13	9/13/2017 09:54:27	12.5	89.2	7.79	46383	30.06
Composite 8	E	13	9/13/2017 09:54:38	12.4	88.9	7.79	46279	29.98

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	14	9/14/2017 09:48:07	12.3	93	7.82	46013	29.78
Laboratory Control	B	14	9/14/2017 09:48:30	12.3	95.6	7.83	46023	29.79
Laboratory Control	C	14	9/14/2017 09:48:53	12.3	94.9	7.81	46019	29.79
Laboratory Control	D	14	9/14/2017 09:49:12	12.3	92	7.8	46026	29.79
Laboratory Control	E	14	9/14/2017 09:49:35	12.3	97.8	7.82	46036	29.8
CLDS Reference Site	A	14	9/14/2017 09:49:54	12.3	94	7.81	46009	29.78
CLDS Reference Site	B	14	9/14/2017 09:50:11	12.3	94.3	7.81	46038	29.8
CLDS Reference Site	C	14	9/14/2017 09:50:33	12.3	98.4	7.84	46025	29.79
CLDS Reference Site	D	14	9/14/2017 09:51:00	12.3	98.2	7.84	46030	29.8
CLDS Reference Site	E	14	9/14/2017 09:51:20	12.3	100.3	7.85	46019	29.79
Composite 1	A	14	9/14/2017 09:51:52	12.4	91.7	7.81	46026	29.8
Composite 1	B	14	9/14/2017 09:52:17	12.3	95.6	7.82	46048	29.81
Composite 1	C	14	9/14/2017 09:52:44	12.3	97.7	7.82	45952	29.74
Composite 1	D	14	9/14/2017 09:53:05	12.3	100.4	7.86	46008	29.78
Composite 1	E	14	9/14/2017 09:53:26	12.3	95.5	7.84	46046	29.81
Composite 2	A	14	9/14/2017 09:53:38	12.3	96.2	7.83	46018	29.79
Composite 2	B	14	9/14/2017 09:54:03	12.3	100.2	7.86	46049	29.81
Composite 2	C	14	9/14/2017 09:54:28	12.3	100.7	7.86	46033	29.8
Composite 2	D	14	9/14/2017 09:54:50	12.3	97.3	7.84	46055	29.81
Composite 2	E	14	9/14/2017 09:55:06	12.3	97.7	7.84	46035	29.8
Composite 3	A	14	9/14/2017 09:55:23	12.4	95.2	7.82	46037	29.8
Composite 3	B	14	9/14/2017 09:55:38	12.4	96.3	7.83	46053	29.81
Composite 3	C	14	9/14/2017 09:56:52	12.4	98.5	7.84	46050	29.81
Composite 3	D	14	9/14/2017 09:57:31	12.4	96.5	7.83	46052	29.81
Composite 3	E	14	9/14/2017 09:57:54	12.4	97.7	7.83	46052	29.81
Composite 4	A	14	9/14/2017 09:58:12	12.4	96.8	7.84	46066	29.83
Composite 4	B	14	9/14/2017 09:58:36	12.4	93.6	7.8	45977	29.76
Composite 4	C	14	9/14/2017 10:00:33	12.4	108.5	7.85	46063	29.82
Composite 4	D	14	9/14/2017 10:00:59	12.3	104.7	7.86	46063	29.82
Composite 4	E	14	9/14/2017 10:01:20	12.3	102.8	7.85	45925	29.72
Composite 5	A	14	9/14/2017 10:01:42	12.3	97.4	7.82	46061	29.82
Composite 5	B	14	9/14/2017 10:02:09	12.3	98.6	7.83	46078	29.83
Composite 5	C	14	9/14/2017 10:02:31	12.3	101.4	7.85	46074	29.83
Composite 5	D	14	9/14/2017 10:03:05	12.3	99.4	7.84	45966	29.75
Composite 5	E	14	9/14/2017 10:03:52	12.2	100.2	7.85	46097	29.84
Composite 6	A	14	9/14/2017 10:04:14	12.2	97.3	7.8	45898	29.7
Composite 6	B	14	9/14/2017 10:04:30	12.2	92.9	7.79	46106	29.85
Composite 6	C	14	9/14/2017 10:04:42	12.1	93.3	7.78	46112	29.85
Composite 6	D	14	9/14/2017 10:05:01	12.1	97.6	7.81	46105	29.84
Composite 6	E	14	9/14/2017 10:05:15	12	97.7	7.81	46082	29.82
Composite 7	A	14	9/14/2017 10:05:50	11.9	93.8	7.78	46112	29.84
Composite 7	B	14	9/14/2017 10:06:12	12.1	94.2	7.77	46108	29.84
Composite 7	C	14	9/14/2017 10:06:24	12.2	95.3	7.77	46076	29.82
Composite 7	D	14	9/14/2017 10:06:47	12.3	96.9	7.79	46097	29.84
Composite 7	E	14	9/14/2017 10:07:00	12.4	93.2	7.79	46097	29.85
Composite 8	A	14	9/14/2017 10:07:21	12.4	92.6	7.79	46087	29.84
Composite 8	B	14	9/14/2017 10:07:47	12.4	91.4	7.79	46078	29.83
Composite 8	C	14	9/14/2017 10:08:14	12.4	80.3	7.71	45919	29.72
Composite 8	D	14	9/14/2017 10:08:33	12.3	91	7.77	46101	29.85
Composite 8	E	14	9/14/2017 10:08:48	12.3	90.4	7.78	46062	29.82

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	15	9/15/2017 08:18:10	12.9	86.4	7.64	45337	29.32
Laboratory Control	B	15	9/15/2017 08:18:33	13.2	88.5	7.66	45208	29.24
Laboratory Control	C	15	9/15/2017 08:19:03	13.3	86.8	7.65	45220	29.25
Laboratory Control	D	15	9/15/2017 08:19:30	13.2	85.8	7.65	45228	29.25
Laboratory Control	E	15	9/15/2017 08:20:10	13.2	91.2	7.68	45232	29.25
CLDS Reference Site	A	15	9/15/2017 08:20:30	13.2	86.4	7.66	45234	29.25
CLDS Reference Site	B	15	9/15/2017 08:20:57	13.4	85.7	7.65	45176	29.22
CLDS Reference Site	C	15	9/15/2017 08:21:20	13.3	92.1	7.69	45229	29.26
CLDS Reference Site	D	15	9/15/2017 08:21:48	13.4	90.7	7.69	45196	29.23
CLDS Reference Site	E	15	9/15/2017 08:22:08	13	93.7	7.71	45335	29.32
Composite 1	A	15	9/15/2017 08:22:41	13	84.8	7.67	45248	29.26
Composite 1	B	15	9/15/2017 08:23:00	13.1	88.3	7.67	45215	29.24
Composite 1	C	15	9/15/2017 08:23:18	12.6	91.8	7.68	45495	29.42
Composite 1	D	15	9/15/2017 08:23:56	12.9	95.1	7.74	45284	29.28
Composite 1	E	15	9/15/2017 08:24:20	13.2	87.1	7.69	45206	29.24
Composite 2	A	15	9/15/2017 08:24:43	13.3	88.8	7.69	45225	29.25
Composite 2	B	15	9/15/2017 08:25:14	13.3	94.2	7.73	45179	29.22
Composite 2	C	15	9/15/2017 08:25:43	13.2	94.7	7.73	45249	29.27
Composite 2	D	15	9/15/2017 08:26:21	13.3	91.4	7.7	45207	29.24
Composite 2	E	15	9/15/2017 08:26:38	13.1	91.4	7.7	45308	29.31
Composite 3	A	15	9/15/2017 08:26:58	13.3	88.6	7.68	45222	29.25
Composite 3	B	15	9/15/2017 08:27:18	13.3	90	7.69	45225	29.25
Composite 3	C	15	9/15/2017 08:27:54	12.9	93.3	7.71	45248	29.26
Composite 3	D	15	9/15/2017 08:28:13	13.3	90.1	7.7	45200	29.23
Composite 3	E	15	9/15/2017 08:28:32	13.2	91.9	7.7	45255	29.27
Composite 4	A	15	9/15/2017 08:28:55	13.4	90.4	7.7	45189	29.23
Composite 4	B	15	9/15/2017 08:29:20	12.8	87.6	7.67	45484	29.42
Composite 4	C	15	9/15/2017 08:29:46	13.1	94.8	7.72	45295	29.3
Composite 4	D	15	9/15/2017 08:30:10	13.2	94.5	7.74	45254	29.27
Composite 4	E	15	9/15/2017 08:30:33	12.7	94.9	7.73	45482	29.42
Composite 5	A	15	9/15/2017 08:30:56	13.3	88.8	7.7	45247	29.27
Composite 5	B	15	9/15/2017 08:31:16	13.5	90.8	7.7	45172	29.22
Composite 5	C	15	9/15/2017 08:31:40	13.1	95.2	7.73	45292	29.29
Composite 5	D	15	9/15/2017 08:31:59	12.6	93.9	7.73	45479	29.41
Composite 5	E	15	9/15/2017 08:32:29	12.8	93.5	7.73	45285	29.28
Composite 6	A	15	9/15/2017 08:32:44	12.1	92.2	7.68	45675	29.53
Composite 6	B	15	9/15/2017 08:33:04	12.9	85.1	7.65	45267	29.27
Composite 6	C	15	9/15/2017 08:33:24	12.4	86	7.63	45453	29.38
Composite 6	D	15	9/15/2017 08:33:49	12.5	92	7.67	45305	29.28
Composite 6	E	15	9/15/2017 08:34:08	11.8	92.8	7.69	45625	29.48
Composite 7	A	15	9/15/2017 08:34:29	12.2	87.7	7.65	45305	29.27
Composite 7	B	15	9/15/2017 08:34:54	12.5	87.2	7.63	45327	29.3
Composite 7	C	15	9/15/2017 08:35:10	12.5	90.3	7.64	45390	29.34
Composite 7	D	15	9/15/2017 08:35:25	12.7	90.7	7.65	45255	29.25
Composite 7	E	15	9/15/2017 08:35:47	12.9	84.6	7.63	45185	29.21
Composite 8	A	15	9/15/2017 08:36:11	12.8	85.9	7.65	45289	29.28
Composite 8	B	15	9/15/2017 08:36:37	13.1	84.5	7.65	45286	29.29
Composite 8	C	15	9/15/2017 08:37:05	12.7	84	7.64	45511	29.44
Composite 8	D	15	9/15/2017 08:37:35	13.4	83.1	7.65	45195	29.23
Composite 8	E	15	9/15/2017 08:37:57	12.7	82.4	7.66	45443	29.39

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	16	9/16/2017 09:04:06	12.8	94.7	7.8	45373	29.34
Laboratory Control	B	16	9/16/2017 09:04:26	12.7	95.8	7.8	45311	29.3
Laboratory Control	C	16	9/16/2017 09:04:45	12.9	94.5	7.79	45355	29.33
Laboratory Control	D	16	9/16/2017 09:05:09	12.7	94.2	7.78	45345	29.32
Laboratory Control	E	16	9/16/2017 09:05:32	12.7	97	7.81	45349	29.32
CLDS Reference Site	A	16	9/16/2017 09:05:51	12.7	93.4	7.79	45351	29.32
CLDS Reference Site	B	16	9/16/2017 09:06:16	12.8	93.3	7.79	45356	29.33
CLDS Reference Site	C	16	9/16/2017 09:06:33	12.8	96.8	7.83	45349	29.32
CLDS Reference Site	D	16	9/16/2017 09:06:55	12.8	95.3	7.83	45353	29.33
CLDS Reference Site	E	16	9/16/2017 09:07:18	12.7	98.4	7.87	45368	29.34
Composite 1	A	16	9/16/2017 09:07:48	12.7	90.5	7.8	45328	29.31
Composite 1	B	16	9/16/2017 09:08:09	12.7	95	7.81	45373	29.34
Composite 1	C	16	9/16/2017 09:08:34	12.7	95.9	7.83	45337	29.31
Composite 1	D	16	9/16/2017 09:08:59	12.7	98.8	7.88	45352	29.32
Composite 1	E	16	9/16/2017 09:09:28	12.8	91	7.82	45359	29.33
Composite 2	A	16	9/16/2017 09:09:50	12.8	93.8	7.83	45374	29.34
Composite 2	B	16	9/16/2017 09:10:26	12.7	98.6	7.88	45356	29.33
Composite 2	C	16	9/16/2017 09:10:50	12.8	98.4	7.89	45341	29.32
Composite 2	D	16	9/16/2017 09:11:07	12.8	96.3	7.86	45393	29.36
Composite 2	E	16	9/16/2017 09:11:22	12.6	96.5	7.86	45320	29.3
Composite 3	A	16	9/16/2017 09:11:39	12.8	91.5	7.81	45367	29.34
Composite 3	B	16	9/16/2017 09:12:04	12.9	95.3	7.83	45378	29.35
Composite 3	C	16	9/16/2017 09:17:30	12.9	98.1	7.86	45396	29.36
Composite 3	D	16	9/16/2017 09:17:51	12.8	95.8	7.85	45354	29.33
Composite 3	E	16	9/16/2017 09:18:12	12.7	97.2	7.85	45341	29.32
Composite 4	A	16	9/16/2017 09:18:38	12.7	94.9	7.86	45337	29.31
Composite 4	B	16	9/16/2017 09:19:00	12.6	91	7.81	45380	29.34
Composite 4	C	16	9/16/2017 09:19:23	12.6	98.6	7.87	45348	29.32
Composite 4	D	16	9/16/2017 09:19:50	12.7	99.1	7.89	45357	29.33
Composite 4	E	16	9/16/2017 09:20:15	12.7	98.1	7.89	45356	29.33
Composite 5	A	16	9/16/2017 09:20:32	13	94.4	7.85	45352	29.33
Composite 5	B	16	9/16/2017 09:20:48	12.9	95	7.85	45358	29.33
Composite 5	C	16	9/16/2017 09:21:11	12.7	99	7.9	45359	29.33
Composite 5	D	16	9/16/2017 09:22:00	12.6	95.7	7.89	45376	29.34
Composite 5	E	16	9/16/2017 09:22:40	12.2	97.8	7.88	45385	29.33
Composite 6	A	16	9/16/2017 09:23:07	12.1	92.4	7.81	45483	29.39
Composite 6	B	16	9/16/2017 09:23:27	12.1	88.4	7.76	45383	29.33
Composite 6	C	16	9/16/2017 09:23:48	12.3	89.8	7.76	45404	29.34
Composite 6	D	16	9/16/2017 09:24:05	12.1	96.4	7.81	45421	29.35
Composite 6	E	16	9/16/2017 09:24:20	11.9	97.1	7.82	45419	29.34
Composite 7	A	16	9/16/2017 09:24:55	11.9	92.4	7.78	45424	29.34
Composite 7	B	16	9/16/2017 09:25:27	12.1	91.1	7.75	45392	29.33
Composite 7	C	16	9/16/2017 09:25:49	12.2	93.6	7.77	45365	29.32
Composite 7	D	16	9/16/2017 09:26:12	12.5	94.9	7.8	45380	29.33
Composite 7	E	16	9/16/2017 09:26:30	12.6	90.4	7.76	45375	29.34
Composite 8	A	16	9/16/2017 09:26:50	12.7	91.2	7.79	45384	29.35
Composite 8	B	16	9/16/2017 09:27:19	12.8	87.6	7.79	45364	29.34
Composite 8	C	16	9/16/2017 09:27:38	12.7	89.1	7.78	45354	29.33
Composite 8	D	16	9/16/2017 09:27:59	12.9	87.3	7.78	45350	29.33
Composite 8	E	16	9/16/2017 09:28:16	12.6	87.1	7.79	45363	29.33

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	17	9/17/2017 11:02:02	12.8	93.4	7.71	47140	30.61
Laboratory Control	B	17	9/17/2017 11:02:18	12.8	94.6	7.72	47086	30.57
Laboratory Control	C	17	9/17/2017 11:02:30	12.9	94.4	7.71	47133	30.61
Laboratory Control	D	17	9/17/2017 11:02:45	12.8	91.8	7.7	47105	30.59
Laboratory Control	E	17	9/17/2017 11:03:18	12.8	95.6	7.73	47133	30.61
CLDS Reference Site	A	17	9/17/2017 11:03:35	12.8	91.7	7.7	47135	30.61
CLDS Reference Site	B	17	9/17/2017 11:03:47	12.8	92.5	7.71	47106	30.59
CLDS Reference Site	C	17	9/17/2017 11:03:59	12.8	95.9	7.73	47106	30.59
CLDS Reference Site	D	17	9/17/2017 11:04:07	12.8	96.7	7.74	47111	30.59
CLDS Reference Site	E	17	9/17/2017 11:04:18	12.8	97.5	7.76	47133	30.61
Composite 1	A	17	9/17/2017 11:04:40	12.6	89.7	7.71	46975	30.49
Composite 1	B	17	9/17/2017 11:04:56	12.6	94.2	7.72	47124	30.59
Composite 1	C	17	9/17/2017 11:05:05	12.6	95.4	7.74	47077	30.56
Composite 1	D	17	9/17/2017 11:05:14	12.7	97.8	7.77	47124	30.6
Composite 1	E	17	9/17/2017 11:05:31	12.8	93.5	7.74	47139	30.61
Composite 2	A	17	9/17/2017 11:05:45	12.7	94.1	7.74	47086	30.57
Composite 2	B	17	9/17/2017 11:06:09	12.7	98.5	7.79	47126	30.6
Composite 2	C	17	9/17/2017 11:07:13	12.8	98.3	7.79	47129	30.6
Composite 2	D	17	9/17/2017 11:07:35	12.9	95.1	7.75	47155	30.63
Composite 2	E	17	9/17/2017 11:07:51	12.6	96.8	7.78	46934	30.46
Composite 3	A	17	9/17/2017 11:08:12	12.8	96.9	7.77	47106	30.59
Composite 3	B	17	9/17/2017 11:08:35	12.9	92.6	7.72	47134	30.61
Composite 3	C	17	9/17/2017 11:08:51	13	94.7	7.73	47167	30.64
Composite 3	D	17	9/17/2017 11:10:34	12.9	96.2	7.75	47159	30.63
Composite 3	E	17	9/17/2017 11:10:45	12.8	95.8	7.76	47117	30.6
Composite 4	A	17	9/17/2017 11:10:58	12.6	96.2	7.77	46993	30.5
Composite 4	B	17	9/17/2017 11:11:09	12.6	96	7.77	46971	30.48
Composite 4	C	17	9/17/2017 11:11:27	12.5	91.4	7.75	46732	30.31
Composite 4	D	17	9/17/2017 11:11:46	12.5	98.9	7.79	46936	30.46
Composite 4	E	17	9/17/2017 11:12:42	12.7	98.3	7.81	47108	30.58
Composite 5	A	17	9/17/2017 11:13:26	12.9	93.6	7.75	47182	30.65
Composite 5	B	17	9/17/2017 11:13:46	12.9	95.9	7.76	47156	30.63
Composite 5	C	17	9/17/2017 11:14:08	12.6	99.3	7.81	47080	30.56
Composite 5	D	17	9/17/2017 11:14:22	12.5	97.7	7.8	47013	30.51
Composite 5	E	17	9/17/2017 11:15:31	12.5	92.4	7.79	47145	30.6
Composite 6	A	17	9/17/2017 11:15:45	12.1	95.6	7.76	46678	30.25
Composite 6	B	17	9/17/2017 11:16:06	12.1	83	7.66	46864	30.39
Composite 6	C	17	9/17/2017 11:16:25	11.9	82	7.62	46568	30.16
Composite 6	D	17	9/17/2017 11:16:45	11.8	95	7.71	46616	30.19
Composite 6	E	17	9/17/2017 11:16:57	11.7	95.8	7.73	46587	30.17
Composite 7	A	17	9/17/2017 11:18:17	11.7	91.6	7.69	46743	30.28
Composite 7	B	17	9/17/2017 11:18:39	11.9	92.8	7.68	46713	30.27
Composite 7	C	17	9/17/2017 11:18:50	12.1	92.2	7.68	46502	30.13
Composite 7	D	17	9/17/2017 11:19:02	12.4	94.6	7.7	47124	30.58
Composite 7	E	17	9/17/2017 11:19:18	12.4	91.4	7.68	47004	30.5
Composite 8	A	17	9/17/2017 11:19:27	12.5	91.9	7.7	47174	30.63
Composite 8	B	17	9/17/2017 11:20:57	13	89.7	7.7	47185	30.65
Composite 8	C	17	9/17/2017 11:21:08	12.8	89.5	7.71	47093	30.58
Composite 8	D	17	9/17/2017 11:21:17	12.8	89.4	7.71	47136	30.61
Composite 8	E	17	9/17/2017 11:21:32	12.5	88.4	7.73	46996	30.5

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	18	9/18/2017 11:33:29	12.8	94.3	7.75	46989	30.5
Laboratory Control	B	18	9/18/2017 11:33:58	12.8	96.6	7.76	46983	30.5
Laboratory Control	C	18	9/18/2017 11:34:29	13.1	94.3	7.75	46986	30.51
Laboratory Control	D	18	9/18/2017 11:34:43	12.8	92.7	7.73	46987	30.5
Laboratory Control	E	18	9/18/2017 11:35:14	12.9	97.6	7.77	46989	30.51
CLDS Reference Site	A	18	9/18/2017 11:35:35	12.8	92.9	7.75	46982	30.5
CLDS Reference Site	B	18	9/18/2017 11:35:55	12.9	93.6	7.75	46985	30.5
CLDS Reference Site	C	18	9/18/2017 11:36:12	12.9	97.9	7.79	46978	30.5
CLDS Reference Site	D	18	9/18/2017 11:36:28	12.8	98.3	7.8	46979	30.5
CLDS Reference Site	E	18	9/18/2017 11:36:45	12.8	99.7	7.82	47000	30.51
Composite 1	A	18	9/18/2017 11:37:54	12.8	91.7	7.75	46991	30.5
Composite 1	B	18	9/18/2017 11:38:11	12.8	95.3	7.77	46995	30.51
Composite 1	C	18	9/18/2017 11:38:28	12.8	97.2	7.79	47037	30.54
Composite 1	D	18	9/18/2017 11:38:44	12.8	100.3	7.83	46973	30.49
Composite 1	E	18	9/18/2017 11:39:08	12.9	94.2	7.78	46999	30.52
Composite 2	A	18	9/18/2017 11:39:25	12.8	95.9	7.79	46961	30.48
Composite 2	B	18	9/18/2017 11:40:14	12.7	100.1	7.86	46979	30.49
Composite 2	C	18	9/18/2017 11:40:31	12.9	100.4	7.85	46990	30.51
Composite 2	D	18	9/18/2017 11:40:53	13.1	96.7	7.8	46986	30.51
Composite 2	E	18	9/18/2017 11:41:13	12.7	97.5	7.82	46882	30.42
Composite 3	A	18	9/18/2017 11:41:33	12.8	93.4	7.77	46978	30.5
Composite 3	B	18	9/18/2017 11:42:03	12.6	98	7.81	46990	30.5
Composite 3	C	18	9/18/2017 11:43:09	13.1	97.8	7.81	47000	30.52
Composite 3	D	18	9/18/2017 11:43:27	12.9	97	7.8	46974	30.49
Composite 3	E	18	9/18/2017 11:43:47	12.8	98.1	7.81	46976	30.49
Composite 4	A	18	9/18/2017 11:44:03	12.7	98.2	7.83	46955	30.48
Composite 4	B	18	9/18/2017 11:44:29	12.7	93.4	7.78	46928	30.45
Composite 4	C	18	9/18/2017 11:44:56	12.6	101.1	7.86	46921	30.45
Composite 4	D	18	9/18/2017 11:49:35	12.7	100.5	7.88	46969	30.48
Composite 4	E	18	9/18/2017 11:49:52	12.7	100.5	7.87	46972	30.49
Composite 5	A	18	9/18/2017 11:50:10	13.1	95.2	7.81	46984	30.51
Composite 5	B	18	9/18/2017 11:50:31	13	97.5	7.82	46994	30.52
Composite 5	C	18	9/18/2017 11:50:48	12.7	100.6	7.87	46975	30.49
Composite 5	D	18	9/18/2017 11:51:17	12.6	99	7.86	46964	30.48
Composite 5	E	18	9/18/2017 11:54:34	12.6	98.6	7.84	47014	30.51
Composite 6	A	18	9/18/2017 11:54:57	12.1	97.2	7.8	46700	30.27
Composite 6	B	18	9/18/2017 11:55:16	12.2	92	7.75	46927	30.44
Composite 6	C	18	9/18/2017 11:55:34	12	93.3	7.73	46724	30.28
Composite 6	D	18	9/18/2017 11:55:51	12	98.5	7.79	46959	30.45
Composite 6	E	18	9/18/2017 11:56:04	11.8	98.1	7.8	46591	30.18
Composite 7	A	18	9/18/2017 11:57:31	12	92.6	7.73	47019	30.49
Composite 7	B	18	9/18/2017 11:57:53	12	94.8	7.73	46890	30.4
Composite 7	C	18	9/18/2017 11:58:21	12.2	96.9	7.76	46858	30.39
Composite 7	D	18	9/18/2017 11:58:40	12.4	97.6	7.77	46990	30.49
Composite 7	E	18	9/18/2017 11:59:04	12.6	92.6	7.73	46999	30.5
Composite 8	A	18	9/18/2017 11:59:28	12.6	93.3	7.78	47002	30.51
Composite 8	B	18	9/18/2017 12:00:23	12.4	79.4	7.7	46922	30.44
Composite 8	C	18	9/18/2017 12:00:47	12.6	90.6	7.75	46968	30.48
Composite 8	D	18	9/18/2017 12:01:13	12.7	87.3	7.75	46990	30.5
Composite 8	E	18	9/18/2017 12:01:36	12.8	90.4	7.76	46987	30.5

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	19	9/19/2017 09:13:47	12.4	92.9	7.77	45983	29.77
Laboratory Control	B	19	9/19/2017 09:14:22	12.4	96.1	7.78	45976	29.76
Laboratory Control	C	19	9/19/2017 09:14:41	12.5	94.3	7.78	46007	29.78
Laboratory Control	D	19	9/19/2017 09:15:02	12.4	92.3	7.76	45980	29.76
Laboratory Control	E	19	9/19/2017 09:15:27	12.4	97.4	7.79	45994	29.77
CLDS Reference Site	A	19	9/19/2017 09:15:52	12.4	93.9	7.77	45963	29.75
CLDS Reference Site	B	19	9/19/2017 09:16:10	12.4	94	7.77	45983	29.77
CLDS Reference Site	C	19	9/19/2017 09:16:45	12.4	97.4	7.81	45975	29.76
CLDS Reference Site	D	19	9/19/2017 09:17:02	12.5	96.3	7.81	45958	29.75
CLDS Reference Site	E	19	9/19/2017 09:17:24	12.5	98.5	7.83	45976	29.76
Composite 1	A	19	9/19/2017 09:18:01	12.5	92.4	7.78	45993	29.78
Composite 1	B	19	9/19/2017 09:18:18	12.5	94	7.78	45964	29.75
Composite 1	C	19	9/19/2017 09:18:42	12.5	96.5	7.8	45998	29.78
Composite 1	D	19	9/19/2017 09:19:00	12.4	99.8	7.83	45990	29.77
Composite 1	E	19	9/19/2017 09:19:23	12.5	94.4	7.8	46011	29.79
Composite 2	A	19	9/19/2017 09:20:11	12.5	95.9	7.81	45998	29.78
Composite 2	B	19	9/19/2017 09:20:33	12.4	99.3	7.84	45992	29.77
Composite 2	C	19	9/19/2017 09:21:04	12.4	99.6	7.84	46018	29.79
Composite 2	D	19	9/19/2017 09:21:26	12.5	96.6	7.82	46036	29.81
Composite 2	E	19	9/19/2017 09:21:48	12.5	96	7.81	45984	29.77
Composite 3	A	19	9/19/2017 09:22:13	12.5	93.8	7.79	45987	29.77
Composite 3	B	19	9/19/2017 09:22:30	12.5	95.9	7.79	45920	29.72
Composite 3	C	19	9/19/2017 09:24:03	12.5	98.2	7.82	46055	29.82
Composite 3	D	19	9/19/2017 09:24:30	12.5	96.8	7.81	45979	29.77
Composite 3	E	19	9/19/2017 09:24:53	12.5	97.4	7.81	45988	29.77
Composite 4	A	19	9/19/2017 09:25:06	12.5	97.1	7.82	45898	29.71
Composite 4	B	19	9/19/2017 09:25:23	12.5	92.7	7.79	45875	29.69
Composite 4	C	19	9/19/2017 09:25:44	12.5	99.3	7.84	45844	29.67
Composite 4	D	19	9/19/2017 09:26:21	12.4	100.2	7.85	45989	29.77
Composite 4	E	19	9/19/2017 09:26:47	12.4	100	7.85	45944	29.74
Composite 5	A	19	9/19/2017 09:27:09	12.5	95.1	7.81	46024	29.8
Composite 5	B	19	9/19/2017 09:27:31	12.5	97.4	7.83	46034	29.81
Composite 5	C	19	9/19/2017 09:27:51	12.5	99	7.85	45995	29.78
Composite 5	D	19	9/19/2017 09:28:18	12.4	98.3	7.86	45905	29.71
Composite 5	E	19	9/19/2017 09:29:01	12.3	98.2	7.84	46017	29.79
Composite 6	A	19	9/19/2017 09:29:37	12.3	95.6	7.79	45961	29.74
Composite 6	B	19	9/19/2017 09:30:06	12.3	90.9	7.76	46005	29.77
Composite 6	C	19	9/19/2017 09:30:25	12.1	90.8	7.73	45876	29.68
Composite 6	D	19	9/19/2017 09:30:48	12.1	97.5	7.79	46021	29.78
Composite 6	E	19	9/19/2017 09:31:25	12	97	7.8	45644	29.5
Composite 7	A	19	9/19/2017 09:32:13	12	91.8	7.75	46009	29.77
Composite 7	B	19	9/19/2017 09:32:33	12.1	92.6	7.74	45942	29.72
Composite 7	C	19	9/19/2017 09:32:49	12.3	94.7	7.75	45975	29.75
Composite 7	D	19	9/19/2017 09:33:10	12.3	97.1	7.78	45966	29.75
Composite 7	E	19	9/19/2017 09:33:29	12.4	91.8	7.74	45994	29.77
Composite 8	A	19	9/19/2017 09:33:49	12.5	92.4	7.78	46029	29.8
Composite 8	B	19	9/19/2017 09:34:23	12.4	84.3	7.74	45845	29.67
Composite 8	C	19	9/19/2017 09:34:45	12.5	89.6	7.76	46012	29.79
Composite 8	D	19	9/19/2017 09:35:03	12.5	89.5	7.77	46025	29.8
Composite 8	E	19	9/19/2017 09:35:20	12.4	92	7.79	46004	29.78

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	20	9/20/2017 10:30:54	12.4	94.4	7.8	47586	30.92
Laboratory Control	B	20	9/20/2017 10:31:13	12.4	95.5	7.81	47585	30.92
Laboratory Control	C	20	9/20/2017 10:31:33	12.5	95	7.81	47594	30.93
Laboratory Control	D	20	9/20/2017 10:31:51	12.4	91.9	7.79	47589	30.92
Laboratory Control	E	20	9/20/2017 10:32:14	12.4	97.2	7.82	47594	30.93
CLDS Reference Site	A	20	9/20/2017 10:32:46	12.4	93.4	7.79	47582	30.92
CLDS Reference Site	B	20	9/20/2017 10:33:07	12.4	93.5	7.79	47589	30.92
CLDS Reference Site	C	20	9/20/2017 10:33:34	12.5	97	7.83	47591	30.93
CLDS Reference Site	D	20	9/20/2017 10:33:50	12.5	96	7.82	47578	30.92
CLDS Reference Site	E	20	9/20/2017 10:34:06	12.5	98.2	7.84	47590	30.92
Composite 1	A	20	9/20/2017 10:34:35	12.5	90.9	7.8	47603	30.94
Composite 1	B	20	9/20/2017 10:34:58	12.4	95.1	7.81	47596	30.93
Composite 1	C	20	9/20/2017 10:35:21	12.5	96.2	7.82	47621	30.95
Composite 1	D	20	9/20/2017 10:35:38	12.4	99.3	7.85	47604	30.93
Composite 1	E	20	9/20/2017 10:36:03	12.5	93.6	7.82	47603	30.93
Composite 2	A	20	9/20/2017 10:36:27	12.5	94.8	7.83	47601	30.93
Composite 2	B	20	9/20/2017 10:37:04	12.4	98.9	7.86	47591	30.92
Composite 2	C	20	9/20/2017 10:37:23	12.5	98.6	7.86	47601	30.93
Composite 2	D	20	9/20/2017 10:37:49	12.5	95.9	7.83	47614	30.94
Composite 2	E	20	9/20/2017 10:38:16	12.5	96.1	7.83	47600	30.93
Composite 3	A	20	9/20/2017 10:38:45	12.5	92.9	7.79	47603	30.94
Composite 3	B	20	9/20/2017 10:39:03	12.5	95.6	7.82	47575	30.91
Composite 3	C	20	9/20/2017 10:39:43	12.5	97.7	7.83	47613	30.94
Composite 3	D	20	9/20/2017 10:39:58	12.5	96.4	7.83	47599	30.93
Composite 3	E	20	9/20/2017 10:40:17	12.5	96.6	7.83	47597	30.93
Composite 4	A	20	9/20/2017 10:40:31	12.5	96.4	7.84	47552	30.9
Composite 4	B	20	9/20/2017 10:40:52	12.5	92.4	7.81	47499	30.86
Composite 4	C	20	9/20/2017 10:41:13	12.5	98.6	7.84	47525	30.88
Composite 4	D	20	9/20/2017 10:41:35	12.5	99	7.86	47603	30.93
Composite 4	E	20	9/20/2017 10:41:52	12.4	99	7.85	47582	30.92
Composite 5	A	20	9/20/2017 10:42:07	12.5	95.8	7.83	47660	30.98
Composite 5	B	20	9/20/2017 10:42:22	12.5	96.6	7.84	47605	30.94
Composite 5	C	20	9/20/2017 10:42:37	12.5	98.7	7.86	47615	30.94
Composite 5	D	20	9/20/2017 10:42:49	12.4	97.8	7.87	47527	30.88
Composite 5	E	20	9/20/2017 10:43:35	12.4	97.8	7.85	47633	30.95
Composite 6	A	20	9/20/2017 10:44:02	12.4	95.4	7.82	47649	30.97
Composite 6	B	20	9/20/2017 10:44:25	12.3	91.8	7.8	47636	30.95
Composite 6	C	20	9/20/2017 10:44:44	12.2	83.7	7.74	47605	30.92
Composite 6	D	20	9/20/2017 10:45:05	12	97.1	7.8	47630	30.94
Composite 6	E	20	9/20/2017 10:45:25	11.9	96.4	7.81	47518	30.85
Composite 7	A	20	9/20/2017 10:45:56	11.9	93.1	7.77	47627	30.93
Composite 7	B	20	9/20/2017 10:46:08	12.1	93.2	7.76	47617	30.93
Composite 7	C	20	9/20/2017 10:46:22	12.3	95	7.77	47617	30.94
Composite 7	D	20	9/20/2017 10:46:40	12.4	96.2	7.8	47633	30.95
Composite 7	E	20	9/20/2017 10:46:57	12.5	91.3	7.77	47625	30.95
Composite 8	A	20	9/20/2017 10:47:11	12.5	92.6	7.8	47636	30.96
Composite 8	B	20	9/20/2017 10:47:48	12.4	84.8	7.76	47520	30.87
Composite 8	C	20	9/20/2017 10:48:09	12.5	87.9	7.78	47614	30.94
Composite 8	D	20	9/20/2017 10:48:22	12.5	88.4	7.79	47613	30.94
Composite 8	E	20	9/20/2017 10:48:44	12.4	91.5	7.81	47623	30.95

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	21	9/21/2017 11:58:04	12.3	95.5	7.84	47814	31.08
Laboratory Control	B	21	9/21/2017 11:58:18	12.3	97.5	7.85	47809	31.08
Laboratory Control	C	21	9/21/2017 11:58:33	12.3	97.1	7.85	47833	31.09
Laboratory Control	D	21	9/21/2017 11:58:49	12.3	93.4	7.83	47820	31.08
Laboratory Control	E	21	9/21/2017 11:59:12	12.3	98.1	7.84	47823	31.08
CLDS Reference Site	A	21	9/21/2017 11:59:29	12.3	95.1	7.84	47819	31.08
CLDS Reference Site	B	21	9/21/2017 11:59:47	12.3	95	7.83	47820	31.08
CLDS Reference Site	C	21	9/21/2017 12:00:05	12.3	98.9	7.85	47823	31.09
CLDS Reference Site	D	21	9/21/2017 12:00:20	12.3	98.5	7.85	47811	31.08
CLDS Reference Site	E	21	9/21/2017 12:00:31	12.3	100.1	7.85	47829	31.09
Composite 1	A	21	9/21/2017 12:00:54	12.4	93	7.84	47810	31.08
Composite 1	B	21	9/21/2017 12:01:13	12.3	96.7	7.83	47813	31.08
Composite 1	C	21	9/21/2017 12:01:22	12.3	97.5	7.84	47839	31.1
Composite 1	D	21	9/21/2017 12:01:53	12.3	100.2	7.87	47838	31.1
Composite 1	E	21	9/21/2017 12:02:11	12.3	95.1	7.86	47836	31.1
Composite 2	A	21	9/21/2017 12:02:27	12.3	95.7	7.85	47811	31.08
Composite 2	B	21	9/21/2017 12:02:48	12.3	100.3	7.87	47830	31.09
Composite 2	C	21	9/21/2017 12:03:10	12.3	99.9	7.86	47839	31.1
Composite 2	D	21	9/21/2017 12:03:27	12.3	97.7	7.86	47850	31.11
Composite 2	E	21	9/21/2017 12:03:42	12.3	97.2	7.85	47822	31.09
Composite 3	A	21	9/21/2017 12:03:57	12.4	95.3	7.84	47829	31.09
Composite 3	B	21	9/21/2017 12:04:19	12.4	96.7	7.84	47809	31.08
Composite 3	C	21	9/21/2017 12:05:21	12.4	98.5	7.86	47856	31.11
Composite 3	D	21	9/21/2017 12:05:36	12.4	96.8	7.85	47819	31.09
Composite 3	E	21	9/21/2017 12:05:47	12.4	97.3	7.85	47737	31.03
Composite 4	A	21	9/21/2017 12:06:01	12.4	97.3	7.86	47806	31.08
Composite 4	B	21	9/21/2017 12:06:14	12.4	94.2	7.84	47800	31.07
Composite 4	C	21	9/21/2017 12:06:32	12.4	99.7	7.85	47804	31.08
Composite 4	D	21	9/21/2017 12:06:58	12.3	100.2	7.87	47853	31.11
Composite 4	E	21	9/21/2017 12:07:14	12.3	100.2	7.86	47808	31.08
Composite 5	A	21	9/21/2017 12:07:25	12.3	97.2	7.86	47864	31.12
Composite 5	B	21	9/21/2017 12:07:40	12.3	97.3	7.86	47848	31.11
Composite 5	C	21	9/21/2017 12:07:59	12.3	100.3	7.87	47835	31.1
Composite 5	D	21	9/21/2017 12:08:22	12.3	98.1	7.87	47768	31.05
Composite 5	E	21	9/21/2017 12:09:07	12.3	98.6	7.86	47860	31.11
Composite 6	A	21	9/21/2017 12:09:28	12.3	96.2	7.85	47877	31.13
Composite 6	B	21	9/21/2017 12:09:45	12.2	92.7	7.84	47865	31.11
Composite 6	C	21	9/21/2017 12:10:10	12.2	94.9	7.82	47868	31.11
Composite 6	D	21	9/21/2017 12:10:40	12	98.1	7.82	47835	31.08
Composite 6	E	21	9/21/2017 12:10:49	12	97.5	7.82	47773	31.04
Composite 7	A	21	9/21/2017 12:11:19	11.9	92.5	7.79	47868	31.1
Composite 7	B	21	9/21/2017 12:11:30	12	94.1	7.78	47847	31.09
Composite 7	C	21	9/21/2017 12:11:47	12.2	95.4	7.79	47847	31.1
Composite 7	D	21	9/21/2017 12:11:59	12.3	96.3	7.82	47867	31.12
Composite 7	E	21	9/21/2017 12:12:14	12.4	92.4	7.81	47869	31.12
Composite 8	A	21	9/21/2017 12:12:33	12.4	93	7.85	47844	31.11
Composite 8	B	21	9/21/2017 12:14:17	12.4	93.3	7.82	47768	31.05
Composite 8	C	21	9/21/2017 12:14:46	12.4	86.4	7.79	47779	31.06
Composite 8	D	21	9/21/2017 12:15:00	12.4	85.9	7.83	47846	31.11
Composite 8	E	21	9/21/2017 12:15:14	12.3	90.1	7.85	47844	31.1

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	22	9/22/2017 12:53:32	12.7	92.6	7.81	46569	30.2
Laboratory Control	B	22	9/22/2017 12:53:57	12.8	94.1	7.81	46536	30.18
Laboratory Control	C	22	9/22/2017 12:54:19	13	93.5	7.82	46517	30.17
Laboratory Control	D	22	9/22/2017 12:54:57	12.7	90	7.8	46557	30.19
Laboratory Control	E	22	9/22/2017 12:55:26	12.8	95.5	7.82	46547	30.19
CLDS Reference Site	A	22	9/22/2017 12:55:55	12.8	92.1	7.81	46542	30.18
CLDS Reference Site	B	22	9/22/2017 12:56:26	12.7	92.8	7.8	46558	30.19
CLDS Reference Site	C	22	9/22/2017 12:56:48	12.8	96.4	7.83	46552	30.19
CLDS Reference Site	D	22	9/22/2017 12:57:04	12.8	95.2	7.84	46558	30.19
CLDS Reference Site	E	22	9/22/2017 12:57:24	12.8	93.5	7.83	46541	30.18
Composite 1	A	22	9/22/2017 12:57:39	12.9	97.6	7.84	46558	30.2
Composite 1	B	22	9/22/2017 12:58:11	12.6	90.5	7.81	46574	30.2
Composite 1	C	22	9/22/2017 12:58:31	12.6	93	7.81	46565	30.19
Composite 1	D	22	9/22/2017 12:58:52	12.7	95.9	7.83	46544	30.18
Composite 1	E	22	9/22/2017 12:59:12	12.8	97.7	7.85	46518	30.17
Composite 2	A	22	9/22/2017 12:59:31	12.8	90.9	7.82	46532	30.18
Composite 2	B	22	9/22/2017 12:59:48	12.6	94.3	7.83	46572	30.2
Composite 2	C	22	9/22/2017 13:00:11	12.7	98.9	7.86	46475	30.13
Composite 2	D	22	9/22/2017 13:00:32	12.8	98	7.86	46543	30.18
Composite 2	E	22	9/22/2017 13:00:58	12.9	94	7.84	46555	30.2
Composite 3	A	22	9/22/2017 13:01:11	12.9	95.6	7.83	46536	30.18
Composite 3	B	22	9/22/2017 13:01:33	12.8	93.7	7.82	46550	30.19
Composite 3	C	22	9/22/2017 13:01:58	12.7	92.9	7.82	46572	30.2
Composite 3	D	22	9/22/2017 13:02:13	12.7	97.8	7.83	46559	30.19
Composite 3	E	22	9/22/2017 13:02:42	12.8	95.1	7.83	46553	30.19
Composite 4	A	22	9/22/2017 13:03:00	12.8	96.4	7.83	46543	30.18
Composite 4	B	22	9/22/2017 13:03:23	12.8	94.7	7.83	46548	30.19
Composite 4	C	22	9/22/2017 13:03:44	12.7	91.2	7.81	46541	30.18
Composite 4	D	22	9/22/2017 13:04:04	12.4	99.2	7.84	46598	30.21
Composite 4	E	22	9/22/2017 13:04:31	12.9	98.8	7.85	46550	30.19
Composite 5	A	22	9/22/2017 13:05:14	13	94	7.83	46537	30.19
Composite 5	B	22	9/22/2017 13:05:28	13	94.3	7.84	46547	30.19
Composite 5	C	22	9/22/2017 13:05:40	12.7	98.4	7.86	46595	30.21
Composite 5	D	22	9/22/2017 13:06:00	12.5	97.8	7.86	46605	30.22
Composite 5	E	22	9/22/2017 13:06:34	12.6	96.8	7.85	46586	30.21
Composite 6	A	22	9/22/2017 13:06:54	12.8	95	7.82	46544	30.18
Composite 6	B	22	9/22/2017 13:07:09	12.6	91	7.81	46596	30.21
Composite 6	C	22	9/22/2017 13:07:39	12.3	89.8	7.81	46606	30.21
Composite 6	D	22	9/22/2017 13:07:58	12.4	95.9	7.82	46564	30.18
Composite 6	E	22	9/22/2017 13:08:14	11.9	94.5	7.83	46610	30.19
Composite 7	A	22	9/22/2017 13:08:28	11.9	92.4	7.79	46618	30.2
Composite 7	B	22	9/22/2017 13:08:48	12.1	93.1	7.77	46598	30.2
Composite 7	C	22	9/22/2017 13:09:14	12.3	94.9	7.78	46579	30.19
Composite 7	D	22	9/22/2017 13:09:28	12.5	95.6	7.79	46577	30.2
Composite 7	E	22	9/22/2017 13:09:51	12.6	89.9	7.77	46612	30.22
Composite 8	A	22	9/22/2017 13:10:13	12.8	90.8	7.81	46554	30.19
Composite 8	B	22	9/22/2017 13:10:41	13	91.5	7.82	46549	30.19
Composite 8	C	22	9/22/2017 13:10:57	12.7	88.9	7.81	46569	30.2
Composite 8	D	22	9/22/2017 13:11:14	13	86.3	7.8	46549	30.19
Composite 8	E	22	9/22/2017 13:11:30	12.9	90.2	7.82	46558	30.2

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	23	9/23/2017 09:20:47	12.4	92.4	7.81	46630	30.23
Laboratory Control	B	23	9/23/2017 09:21:06	12.4	95.5	7.83	46645	30.24
Laboratory Control	C	23	9/23/2017 09:21:25	12.4	95.9	7.84	46657	30.25
Laboratory Control	D	23	9/23/2017 09:21:50	12.3	92.6	7.82	46658	30.25
Laboratory Control	E	23	9/23/2017 09:22:12	12.4	96.9	7.84	46657	30.25
CLDS Reference Site	A	23	9/23/2017 09:22:37	12.4	93.8	7.83	46653	30.24
CLDS Reference Site	B	23	9/23/2017 09:22:49	12.3	94.6	7.82	46634	30.23
CLDS Reference Site	C	23	9/23/2017 09:23:11	12.4	97.4	7.85	46646	30.24
CLDS Reference Site	D	23	9/23/2017 09:23:29	12.4	97.1	7.85	46637	30.23
CLDS Reference Site	E	23	9/23/2017 09:23:53	12.4	98.6	7.86	46684	30.27
Composite 1	A	23	9/23/2017 09:24:19	12.5	90.3	7.81	46631	30.23
Composite 1	B	23	9/23/2017 09:24:45	12.4	94.8	7.82	46661	30.25
Composite 1	C	23	9/23/2017 09:25:03	12.4	96.5	7.84	46668	30.26
Composite 1	D	23	9/23/2017 09:25:23	12.4	99.3	7.87	46686	30.27
Composite 1	E	23	9/23/2017 09:25:46	12.4	93.7	7.85	46678	30.26
Composite 2	A	23	9/23/2017 09:26:14	12.3	94.4	7.85	46639	30.23
Composite 2	B	23	9/23/2017 09:26:41	12.3	99.6	7.87	46671	30.26
Composite 2	C	23	9/23/2017 09:27:08	12.4	99.2	7.88	46693	30.27
Composite 2	D	23	9/23/2017 09:27:26	12.4	96.2	7.86	46687	30.27
Composite 2	E	23	9/23/2017 09:27:41	12.4	96.4	7.86	46669	30.26
Composite 3	A	23	9/23/2017 09:28:03	12.4	95.3	7.84	46653	30.25
Composite 3	B	23	9/23/2017 09:28:26	12.4	95.9	7.83	46664	30.26
Composite 3	C	23	9/23/2017 10:21:48	12.4	113.1	7.85	46747	30.31
Composite 3	D	23	9/23/2017 10:22:13	12.4	109.3	7.84	46738	30.31
Composite 3	E	23	9/23/2017 10:22:39	12.3	108.8	7.84	46818	30.36
Composite 4	A	23	9/23/2017 10:24:30	12.4	102.9	7.85	46753	30.32
Composite 4	B	23	9/23/2017 10:24:49	12.3	97.1	7.82	46737	30.3
Composite 4	C	23	9/23/2017 10:25:09	12.2	105.9	7.85	46732	30.3
Composite 4	D	23	9/23/2017 10:25:38	12.3	105.1	7.87	46764	30.32
Composite 4	E	23	9/23/2017 10:26:02	12.3	104.8	7.87	46721	30.29
Composite 5	A	23	9/23/2017 10:26:22	12.4	99.9	7.86	46768	30.33
Composite 5	B	23	9/23/2017 10:26:45	12.4	101.1	7.87	46754	30.32
Composite 5	C	23	9/23/2017 10:27:07	12.3	104.7	7.89	46734	30.3
Composite 5	D	23	9/23/2017 10:27:25	12.3	102.6	7.88	46704	30.28
Composite 5	E	23	9/23/2017 10:28:43	12.2	102.1	7.87	46750	30.31
Composite 6	A	23	9/23/2017 10:28:59	12.2	100.4	7.85	46760	30.32
Composite 6	B	23	9/23/2017 10:29:17	12.2	96.1	7.83	46761	30.32
Composite 6	C	23	9/23/2017 10:29:32	12.1	97.6	7.82	46755	30.31
Composite 6	D	23	9/23/2017 10:29:52	12	100.7	7.81	46714	30.27
Composite 6	E	23	9/23/2017 10:30:13	12	100.2	7.83	46701	30.26
Composite 7	A	23	9/23/2017 10:32:08	11.9	88.3	7.76	46763	30.31
Composite 7	B	23	9/23/2017 10:32:31	12	96	7.76	46725	30.28
Composite 7	C	23	9/23/2017 10:32:55	12.1	97.6	7.77	46691	30.26
Composite 7	D	23	9/23/2017 10:33:10	12.3	98.2	7.8	46745	30.31
Composite 7	E	23	9/23/2017 10:33:29	12.4	92.7	7.77	46729	30.3
Composite 8	A	23	9/23/2017 10:33:49	12.4	94.7	7.82	46707	30.29
Composite 8	B	23	9/23/2017 10:34:46	12.4	95	7.84	46749	30.32
Composite 8	C	23	9/23/2017 10:35:16	12.4	86.9	7.79	46692	30.27
Composite 8	D	23	9/23/2017 10:35:46	12.4	88	7.82	46744	30.31
Composite 8	E	23	9/23/2017 10:36:08	12.3	94	7.86	46754	30.32

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	24	9/24/2017 11:11:09	12.7	93.2	7.8	47992	31.22
Laboratory Control	B	24	9/24/2017 11:11:25	13.4	96.2	7.84	47934	31.21
Laboratory Control	C	24	9/24/2017 11:11:35	13.8	95.7	7.85	47951	31.23
Laboratory Control	D	24	9/24/2017 11:11:47	13.4	94.9	7.86	48026	31.28
Laboratory Control	E	24	9/24/2017 11:12:03	13.3	97.5	7.86	47948	31.21
CLDS Reference Site	A	24	9/24/2017 11:12:19	12.9	94	7.83	48054	31.28
CLDS Reference Site	B	24	9/24/2017 11:12:31	13	95.1	7.84	47980	31.23
CLDS Reference Site	C	24	9/24/2017 11:12:46	13.3	98.3	7.86	47930	31.2
CLDS Reference Site	D	24	9/24/2017 11:13:02	13.4	97.2	7.86	47981	31.24
CLDS Reference Site	E	24	9/24/2017 11:13:14	13.7	98.6	7.88	47925	31.21
Composite 1	A	24	9/24/2017 11:13:42	13	92.5	7.85	47988	31.23
Composite 1	B	24	9/24/2017 11:14:04	12.9	94.4	7.84	48000	31.24
Composite 1	C	24	9/24/2017 11:14:43	13.3	97.2	7.87	47983	31.24
Composite 1	D	24	9/24/2017 11:14:53	13.4	99	7.89	47965	31.23
Composite 1	E	24	9/24/2017 11:15:02	13.2	96.4	7.88	47966	31.22
Composite 2	A	24	9/24/2017 11:15:24	13	96.3	7.88	47978	31.23
Composite 2	B	24	9/24/2017 11:15:56	13.2	99.4	7.9	47972	31.23
Composite 2	C	24	9/24/2017 11:16:15	13.3	99.7	7.9	47991	31.25
Composite 2	D	24	9/24/2017 11:16:32	13.8	96.7	7.89	47977	31.25
Composite 2	E	24	9/24/2017 11:16:50	13.5	96.9	7.88	47988	31.25
Composite 3	A	24	9/24/2017 11:17:06	13.4	94.5	7.86	47979	31.24
Composite 3	B	24	9/24/2017 11:17:17	13.1	95.6	7.86	48030	31.27
Composite 3	C	24	9/24/2017 11:17:45	13	95.3	7.87	48010	31.25
Composite 3	D	24	9/24/2017 11:18:01	13.8	96.7	7.88	47975	31.25
Composite 3	E	24	9/24/2017 11:18:12	13.5	97.3	7.88	47966	31.24
Composite 4	A	24	9/24/2017 11:18:25	13.4	96.7	7.87	47985	31.25
Composite 4	B	24	9/24/2017 11:18:48	13.1	93	7.85	47990	31.24
Composite 4	C	24	9/24/2017 11:19:08	12.7	100.5	7.89	48014	31.24
Composite 4	D	24	9/24/2017 11:19:38	13.3	99.9	7.9	47977	31.24
Composite 4	E	24	9/24/2017 11:20:09	13.1	99.7	7.89	47988	31.24
Composite 5	A	24	9/24/2017 11:20:30	13.7	95	7.88	47975	31.25
Composite 5	B	24	9/24/2017 11:20:41	13.6	96.9	7.88	47984	31.25
Composite 5	C	24	9/24/2017 11:20:58	13.2	99.7	7.91	48005	31.25
Composite 5	D	24	9/24/2017 11:21:15	12.9	98.7	7.9	48000	31.24
Composite 5	E	24	9/24/2017 11:22:38	13.2	98.1	7.89	48011	31.26
Composite 6	A	24	9/24/2017 11:22:56	13.4	96.4	7.87	48014	31.26
Composite 6	B	24	9/24/2017 11:23:16	14.1	92.7	7.88	48003	31.28
Composite 6	C	24	9/24/2017 11:23:31	12.1	96.2	7.85	48103	31.28
Composite 6	D	24	9/24/2017 11:24:00	12.3	98.3	7.86	48079	31.27
Composite 6	E	24	9/24/2017 11:24:17	11.9	98.4	7.87	48073	31.25
Composite 7	A	24	9/24/2017 11:24:46	11.9	94.9	7.8	48091	31.26
Composite 7	B	24	9/24/2017 11:25:06	11.9	92.7	7.74	48077	31.25
Composite 7	C	24	9/24/2017 11:25:19	12.3	95.6	7.78	48060	31.26
Composite 7	D	24	9/24/2017 11:25:31	12.4	97.3	7.81	48047	31.25
Composite 7	E	24	9/24/2017 11:25:45	12.7	92.9	7.8	48036	31.26
Composite 8	A	24	9/24/2017 11:26:16	12.8	93.8	7.86	48023	31.25
Composite 8	B	24	9/24/2017 11:26:37	13.1	92.6	7.85	48005	31.25
Composite 8	C	24	9/24/2017 11:26:49	13.1	95.4	7.85	48011	31.25
Composite 8	D	24	9/24/2017 11:27:05	13.6	91.7	7.86	47995	31.26
Composite 8	E	24	9/24/2017 11:27:19	13.4	91.8	7.87	47988	31.25

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	25	9/25/2017 11:42:40	13.2	91.3	7.71	47666	31.01
Laboratory Control	B	25	9/25/2017 11:42:54	13.4	93.9	7.72	47651	31
Laboratory Control	C	25	9/25/2017 11:43:03	13.7	92.9	7.72	47632	31
Laboratory Control	D	25	9/25/2017 11:43:16	13.3	90.3	7.71	47676	31.02
Laboratory Control	E	25	9/25/2017 11:43:30	13.3	95.3	7.73	47633	30.99
CLDS Reference Site	A	25	9/25/2017 11:43:47	13.4	90.8	7.72	47673	31.02
CLDS Reference Site	B	25	9/25/2017 11:44:31	13.4	91.7	7.71	47651	31
CLDS Reference Site	C	25	9/25/2017 11:45:03	13.3	96.9	7.75	47720	31.05
CLDS Reference Site	D	25	9/25/2017 11:45:30	13.5	95.4	7.74	47671	31.02
CLDS Reference Site	E	25	9/25/2017 11:45:49	13.4	97.8	7.76	47657	31.01
Composite 1	A	25	9/25/2017 11:46:39	13.1	93.6	7.74	47667	31
Composite 1	B	25	9/25/2017 11:46:55	12.9	94.2	7.73	47778	31.08
Composite 1	C	25	9/25/2017 11:47:09	13.2	95.5	7.74	47687	31.02
Composite 1	D	25	9/25/2017 11:47:26	13.2	98.3	7.77	47670	31.01
Composite 1	E	25	9/25/2017 11:47:47	13.2	91.9	7.73	47703	31.03
Composite 2	A	25	9/25/2017 11:48:00	13.4	93.2	7.74	47676	31.02
Composite 2	B	25	9/25/2017 11:48:25	13.2	98.3	7.78	47713	31.04
Composite 2	C	25	9/25/2017 11:49:01	13.6	94.9	7.76	47680	31.03
Composite 2	D	25	9/25/2017 11:49:16	13.7	94.7	7.75	47667	31.02
Composite 2	E	25	9/25/2017 11:49:25	13.5	93.6	7.74	47656	31.01
Composite 3	A	25	9/25/2017 11:49:40	13.2	94.1	7.74	47741	31.06
Composite 3	B	25	9/25/2017 11:50:10	13	97.7	7.76	47741	31.05
Composite 3	C	25	9/25/2017 11:50:28	13.4	95	7.75	47665	31.01
Composite 3	D	25	9/25/2017 11:50:43	13.3	96.3	7.75	47695	31.03
Composite 3	E	25	9/25/2017 11:51:04	13.2	94.5	7.75	47713	31.04
Composite 4	A	25	9/25/2017 11:51:17	12.9	91.9	7.73	47766	31.07
Composite 4	B	25	9/25/2017 11:51:34	12.7	99	7.77	47806	31.09
Composite 4	C	25	9/25/2017 11:51:58	12.7	99.1	7.78	47820	31.1
Composite 4	D	25	9/25/2017 11:52:13	12.6	99.1	7.79	47902	31.15
Composite 4	E	25	9/25/2017 11:52:34	13	94.4	7.76	47740	31.06
Composite 5	A	25	9/25/2017 11:52:47	13.4	95.4	7.77	47672	31.02
Composite 5	B	25	9/25/2017 11:53:02	13.3	98.1	7.79	47710	31.04
Composite 5	C	25	9/25/2017 11:53:21	13.2	96.3	7.78	47678	31.02
Composite 5	D	25	9/25/2017 11:54:00	12.4	98.2	7.78	47835	31.1
Composite 5	E	25	9/25/2017 11:54:17	13	94.9	7.75	47744	31.06
Composite 6	A	25	9/25/2017 11:54:33	13.5	89	7.74	47679	31.03
Composite 6	B	25	9/25/2017 11:54:49	12	94.9	7.72	48072	31.25
Composite 6	C	25	9/25/2017 11:55:01	12.3	96.6	7.74	47765	31.04
Composite 6	D	25	9/25/2017 11:55:17	11.5	97.3	7.74	48066	31.23
Composite 6	E	25	9/25/2017 11:55:55	11.9	97	7.74	47786	31.04
Composite 7	A	25	9/25/2017 11:56:04	12	95	7.72	47826	31.08
Composite 7	B	25	9/25/2017 11:56:13	12	94.1	7.71	47903	31.13
Composite 7	C	25	9/25/2017 11:56:28	12.4	95.9	7.73	47716	31.01
Composite 7	D	25	9/25/2017 11:56:44	12.6	91.4	7.7	47742	31.04
Composite 7	E	25	9/25/2017 11:56:51	12.5	91.7	7.72	47774	31.06
Composite 8	A	25	9/25/2017 11:57:42	12.5	92.7	7.75	47792	31.07
Composite 8	B	25	9/25/2017 11:58:04	12.7	92.6	7.74	47838	31.11
Composite 8	C	25	9/25/2017 11:58:15	12.8	94.1	7.74	47910	31.17
Composite 8	D	25	9/25/2017 11:58:33	13.6	88.5	7.73	47671	31.02
Composite 8	E	25	9/25/2017 11:58:50	13	89.9	7.75	47750	31.06

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	26	9/26/2017 11:21:14	12.3	98.1	7.59	46677	30.26
Laboratory Control	B	26	9/26/2017 11:21:39	12.3	99	7.65	46694	30.27
Laboratory Control	C	26	9/26/2017 11:21:55	12.3	100.3	7.69	46692	30.27
Laboratory Control	D	26	9/26/2017 11:22:26	12.2	94.6	7.68	46692	30.27
Laboratory Control	E	26	9/26/2017 11:22:51	12.2	102.9	7.72	46694	30.27
CLDS Reference Site	A	26	9/26/2017 11:23:16	12.3	96.4	7.72	46703	30.28
CLDS Reference Site	B	26	9/26/2017 11:23:35	12.3	98.4	7.72	46693	30.27
CLDS Reference Site	C	26	9/26/2017 11:24:00	12.3	102.3	7.74	46679	30.26
CLDS Reference Site	D	26	9/26/2017 11:24:21	12.4	101.3	7.75	46695	30.28
CLDS Reference Site	E	26	9/26/2017 11:24:56	12.4	102.9	7.76	46726	30.3
Composite 1	A	26	9/26/2017 11:25:21	12.4	99.8	7.75	46718	30.29
Composite 1	B	26	9/26/2017 11:25:51	12.3	100.6	7.74	46699	30.28
Composite 1	C	26	9/26/2017 11:26:16	12.3	102	7.76	46711	30.28
Composite 1	D	26	9/26/2017 11:26:38	12.3	103.2	7.77	46722	30.29
Composite 1	E	26	9/26/2017 11:27:09	12.3	97.6	7.75	46716	30.29
Composite 2	A	26	9/26/2017 11:27:33	12.3	99.2	7.77	46726	30.3
Composite 2	B	26	9/26/2017 11:28:01	12.3	103.3	7.79	46740	30.31
Composite 2	C	26	9/26/2017 11:28:26	12.3	102.7	7.79	46746	30.31
Composite 2	D	26	9/26/2017 11:28:47	12.4	101.3	7.78	46745	30.31
Composite 2	E	26	9/26/2017 11:29:12	12.4	100.7	7.78	46735	30.31
Composite 3	A	26	9/26/2017 11:29:28	12.4	100.2	7.77	46728	30.3
Composite 3	B	26	9/26/2017 11:29:50	12.4	100.3	7.77	46737	30.31
Composite 3	C	26	9/26/2017 11:30:51	12.4	101.7	7.76	46748	30.31
Composite 3	D	26	9/26/2017 11:31:11	12.4	100.3	7.76	46736	30.31
Composite 3	E	26	9/26/2017 11:31:29	12.4	100.6	7.75	46761	30.32
Composite 4	A	26	9/26/2017 11:31:50	12.5	98.6	7.77	46737	30.31
Composite 4	B	26	9/26/2017 11:32:19	12.4	96.7	7.75	46742	30.31
Composite 4	C	26	9/26/2017 11:32:42	12.4	102.9	7.76	46750	30.31
Composite 4	D	26	9/26/2017 11:33:24	12.3	103.1	7.77	46760	30.32
Composite 4	E	26	9/26/2017 11:33:43	12.3	102.6	7.76	46793	30.34
Composite 5	A	26	9/26/2017 11:34:06	12.4	98.1	7.76	46729	30.3
Composite 5	B	26	9/26/2017 11:34:29	12.4	101	7.79	46751	30.32
Composite 5	C	26	9/26/2017 11:34:56	12.4	103.1	7.79	46778	30.34
Composite 5	D	26	9/26/2017 11:35:15	12.3	101.5	7.79	46762	30.32
Composite 5	E	26	9/26/2017 11:36:22	12.1	101.4	7.78	46776	30.32
Composite 6	A	26	9/26/2017 11:36:46	12	99.2	7.74	46778	30.32
Composite 6	B	26	9/26/2017 11:37:06	12	95.5	7.75	46784	30.33
Composite 6	C	26	9/26/2017 11:37:29	11.8	96.7	7.72	46912	30.41
Composite 6	D	26	9/26/2017 11:37:52	11.7	100.8	7.73	46789	30.32
Composite 6	E	26	9/26/2017 11:38:09	11.6	100.7	7.74	46869	30.37
Composite 7	A	26	9/26/2017 11:38:32	11.6	101.3	7.74	46803	30.32
Composite 7	B	26	9/26/2017 11:38:43	11.8	99.9	7.72	46796	30.32
Composite 7	C	26	9/26/2017 11:39:03	11.9	97.7	7.69	46776	30.31
Composite 7	D	26	9/26/2017 11:39:26	12.1	99.3	7.72	46739	30.3
Composite 7	E	26	9/26/2017 11:40:31	12.2	94.2	7.67	46737	30.3
Composite 8	A	26	9/26/2017 11:40:52	12.3	96.3	7.74	46753	30.32
Composite 8	B	26	9/26/2017 11:41:49	12.3	94.3	7.74	46767	30.33
Composite 8	C	26	9/26/2017 11:42:14	12.3	97.1	7.75	46808	30.35
Composite 8	D	26	9/26/2017 11:42:34	12.4	93.2	7.76	46763	30.33
Composite 8	E	26	9/26/2017 11:42:57	12.2	90.8	7.76	46746	30.31

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	27	9/27/2017 09:23:53	12.6	92.9	7.37	47911	31.16
Laboratory Control	B	27	9/27/2017 09:24:11	12.7	96.4	7.49	47902	31.16
Laboratory Control	C	27	9/27/2017 09:24:29	12.9	93.6	7.54	47891	31.16
Laboratory Control	D	27	9/27/2017 09:24:44	12.8	91	7.55	47898	31.16
Laboratory Control	E	27	9/27/2017 09:25:06	12.8	97.3	7.59	47907	31.17
CLDS Reference Site	A	27	9/27/2017 09:25:23	12.8	91.7	7.59	47940	31.19
CLDS Reference Site	B	27	9/27/2017 09:25:33	12.8	93	7.59	47915	31.17
CLDS Reference Site	C	27	9/27/2017 09:25:43	12.9	96.1	7.61	47911	31.17
CLDS Reference Site	D	27	9/27/2017 09:25:58	12.9	96.6	7.62	47933	31.19
CLDS Reference Site	E	27	9/27/2017 09:26:06	13	97	7.63	47933	31.19
Composite 1	A	27	9/27/2017 09:26:28	12.6	95	7.62	47965	31.2
Composite 1	B	27	9/27/2017 09:26:43	12.4	96.3	7.62	47961	31.19
Composite 1	C	27	9/27/2017 09:26:55	12.7	96.6	7.63	48085	31.29
Composite 1	D	27	9/27/2017 09:27:09	12.8	99.5	7.66	47955	31.2
Composite 1	E	27	9/27/2017 09:27:25	12.6	94.2	7.65	47980	31.21
Composite 2	A	27	9/27/2017 09:27:37	12.8	94.7	7.66	47940	31.19
Composite 2	B	27	9/27/2017 09:28:01	12.7	100	7.68	47951	31.2
Composite 2	C	27	9/27/2017 09:28:14	12.9	100	7.68	47930	31.19
Composite 2	D	27	9/27/2017 09:28:30	12.9	96.7	7.67	47971	31.22
Composite 2	E	27	9/27/2017 09:28:44	13.1	95.2	7.67	47927	31.19
Composite 3	A	27	9/27/2017 09:28:56	12.9	95.4	7.67	47940	31.2
Composite 3	B	27	9/27/2017 09:29:04	12.8	95.3	7.66	47947	31.2
Composite 3	C	27	9/27/2017 09:29:28	12.6	98.9	7.67	48008	31.23
Composite 3	D	27	9/27/2017 09:29:42	12.7	96.8	7.67	47978	31.21
Composite 3	E	27	9/27/2017 09:29:56	12.8	97	7.67	47963	31.21
Composite 4	A	27	9/27/2017 09:30:10	13	96.1	7.68	47946	31.2
Composite 4	B	27	9/27/2017 09:30:25	12.7	93.4	7.66	47985	31.22
Composite 4	C	27	9/27/2017 09:30:45	12.7	100	7.69	47980	31.21
Composite 4	D	27	9/27/2017 09:31:15	12.8	100.3	7.7	47955	31.2
Composite 4	E	27	9/27/2017 09:31:26	12.6	100.4	7.7	47987	31.22
Composite 5	A	27	9/27/2017 09:31:42	12.7	95.1	7.69	48013	31.24
Composite 5	B	27	9/27/2017 09:31:50	12.9	96.6	7.69	47959	31.21
Composite 5	C	27	9/27/2017 09:31:59	12.9	98.4	7.7	47972	31.22
Composite 5	D	27	9/27/2017 09:32:20	12.6	98.1	7.71	48057	31.27
Composite 5	E	27	9/27/2017 09:33:34	12.4	99	7.7	48008	31.22
Composite 6	A	27	9/27/2017 09:33:47	12.2	97.5	7.67	48040	31.24
Composite 6	B	27	9/27/2017 09:34:05	12.5	91	7.68	47993	31.22
Composite 6	C	27	9/27/2017 09:34:28	11.8	92	7.61	48226	31.36
Composite 6	D	27	9/27/2017 09:35:04	11.7	99.7	7.65	48111	31.27
Composite 6	E	27	9/27/2017 09:35:16	11.6	98.2	7.65	48177	31.31
Composite 7	A	27	9/27/2017 09:35:47	11.8	99	7.67	48070	31.24
Composite 7	B	27	9/27/2017 09:36:09	12.2	93.1	7.65	48000	31.21
Composite 7	C	27	9/27/2017 09:36:37	12	95.7	7.61	48059	31.24
Composite 7	D	27	9/27/2017 09:36:47	12.3	96.5	7.64	48030	31.24
Composite 7	E	27	9/27/2017 09:37:07	12.4	92.1	7.62	48013	31.23
Composite 8	A	27	9/27/2017 09:37:22	12.5	92.6	7.67	48007	31.23
Composite 8	B	27	9/27/2017 09:38:02	12.5	92.8	7.67	48013	31.23
Composite 8	C	27	9/27/2017 09:38:18	12.4	97.3	7.69	48065	31.27
Composite 8	D	27	9/27/2017 09:38:35	12.9	90	7.69	47961	31.21
Composite 8	E	27	9/27/2017 09:38:55	12.5	90.6	7.69	48007	31.23

STUDY: 29525
CLIENT: AECOM
PROJECT: New Haven Harbor FNP
ASSAY: 28-Day Survival and Bioaccumulation Evaluation
TASK: Daily Water Qualities
Species: *Nereis virens*

	Temp	DO	pH	SpCond	Salinity
Mean:	12.4	95.52		45614	29.50
Minimum:	11.8	60.50	7.53	44024	28.36
Maximum:	12.6	102.20	8.04	46807	30.34

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO % Saturation	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	A	28	9/28/2017 07:54:08	12.3	91.7	7.61	47507	30.86
Laboratory Control	B	28	9/28/2017 07:54:19	12.4	92.8	7.65	47447	30.82
Laboratory Control	C	28	9/28/2017 07:54:33	12.4	90.3	7.66	47423	30.8
Laboratory Control	D	28	9/28/2017 07:54:42	12.4	89.2	7.67	47436	30.81
Laboratory Control	E	28	9/28/2017 07:55:03	12.4	95.5	7.71	47441	30.82
CLDS Reference Site	A	28	9/28/2017 07:55:20	12.4	90	7.7	47437	30.81
CLDS Reference Site	B	28	9/28/2017 07:55:29	12.4	90.8	7.69	47460	30.83
CLDS Reference Site	C	28	9/28/2017 07:55:46	12.4	96.3	7.73	47446	30.82
CLDS Reference Site	D	28	9/28/2017 07:56:00	12.4	95.2	7.73	47458	30.83
CLDS Reference Site	E	28	9/28/2017 07:56:11	12.4	96.7	7.75	47444	30.82
Composite 1	A	28	9/28/2017 07:56:35	12.4	92.3	7.73	47467	30.83
Composite 1	B	28	9/28/2017 07:56:45	12.3	93.6	7.72	47542	30.88
Composite 1	C	28	9/28/2017 07:56:56	12.4	94.7	7.74	47515	30.87
Composite 1	D	28	9/28/2017 07:57:15	12.4	98.5	7.78	47451	30.82
Composite 1	E	28	9/28/2017 07:57:33	12.4	91.3	7.74	47504	30.86
Composite 2	A	28	9/28/2017 07:57:52	12.4	93.9	7.77	47467	30.83
Composite 2	B	28	9/28/2017 07:58:15	12.4	98.4	7.8	47493	30.85
Composite 2	C	28	9/28/2017 07:58:30	12.4	99.2	7.8	47457	30.83
Composite 2	D	28	9/28/2017 07:58:47	12.5	95.3	7.78	47489	30.85
Composite 2	E	28	9/28/2017 07:59:01	12.5	94	7.77	47447	30.82
Composite 3	A	28	9/28/2017 07:59:17	12.5	93.3	7.77	47452	30.83
Composite 3	B	28	9/28/2017 07:59:28	12.4	93.6	7.76	47476	30.84
Composite 3	C	28	9/28/2017 07:59:55	12.4	97.6	7.79	47510	30.86
Composite 3	D	28	9/28/2017 08:00:14	12.4	95.4	7.78	47503	30.86
Composite 3	E	28	9/28/2017 08:00:28	12.4	96	7.78	47502	30.86
Composite 4	A	28	9/28/2017 08:00:41	12.5	94.6	7.78	47456	30.83
Composite 4	B	28	9/28/2017 08:01:15	12.4	90.6	7.75	47547	30.89
Composite 4	C	28	9/28/2017 08:01:33	12.4	98.7	7.8	47519	30.87
Composite 4	D	28	9/28/2017 08:01:55	12.4	99.1	7.82	47504	30.86
Composite 4	E	28	9/28/2017 08:02:14	12.4	98.9	7.82	47561	30.9
Composite 5	A	28	9/28/2017 08:02:29	12.4	94.7	7.8	47569	30.91
Composite 5	B	28	9/28/2017 08:02:42	12.5	95.7	7.81	47499	30.86
Composite 5	C	28	9/28/2017 08:02:59	12.5	99.2	7.83	47487	30.85
Composite 5	D	28	9/28/2017 08:03:19	12.4	96.9	7.83	47551	30.89
Composite 5	E	28	9/28/2017 08:03:59	12.1	97.6	7.82	47490	30.84
Composite 6	A	28	9/28/2017 08:04:14	12	95.9	7.78	47659	30.95
Composite 6	B	28	9/28/2017 08:04:35	12.2	88.9	7.77	47512	30.86
Composite 6	C	28	9/28/2017 08:04:50	11.9	89.7	7.71	47856	31.09
Composite 6	D	28	9/28/2017 08:05:14	11.8	97.5	7.77	47689	30.97
Composite 6	E	28	9/28/2017 08:05:28	11.7	96.6	7.77	47776	31.03
Composite 7	A	28	9/28/2017 08:06:03	11.8	97.3	7.78	47611	30.91
Composite 7	B	28	9/28/2017 08:06:44	12.1	91	7.73	47506	30.85
Composite 7	C	28	9/28/2017 08:06:54	12	93.6	7.72	47664	30.96
Composite 7	D	28	9/28/2017 08:07:04	12.2	95.3	7.74	47515	30.86
Composite 7	E	28	9/28/2017 08:07:22	12.2	90.1	7.7	47588	30.91
Composite 8	A	28	9/28/2017 08:07:39	12.3	91.4	7.76	47546	30.89
Composite 8	B	28	9/28/2017 08:08:07	12.2	89.7	7.76	47608	30.93
Composite 8	C	28	9/28/2017 08:08:25	12.2	94.9	7.79	47691	30.98
Composite 8	D	28	9/28/2017 08:08:47	12.4	87.3	7.78	47507	30.86
Composite 8	E	28	9/28/2017 08:08:59	12.2	87.6	7.77	47594	30.92

Nereis virens Day 28 Recovery Record

DATE: 09/28/17

ESI STUDY: 29525

CLIENT: AECOM

PROJECT: New Haven

SAMPLE ID	REP	# LIVE	Initials	SAMPLE ID	REP	# LIVE	Initials
Laboratory Control Sediment	A	18	JTP	Composite 2	A	20	JTP
Laboratory Control Sediment	B	19	DD	Composite 2	B	20	BG
Laboratory Control Sediment	C	19	JTP	Composite 2	C	19	CFS
Laboratory Control Sediment	D	17	DD	Composite 2	D	19	DD
Laboratory Control Sediment	E	19	JTP	Composite 2	E	20	BG
CLDS Reference Sediment	A	19	DD	Composite 3	A	19	DD
CLDS Reference Sediment	B	19	BG	Composite 3	B	20	GRS
CLDS Reference Sediment	C	20	DD	Composite 3	C	19	CFS
CLDS Reference Sediment	D	19	BG	Composite 3	D	20	BG
CLDS Reference Sediment	E	20	DD	Composite 3	E	20	GRS
Composite 1	A	20	BG	Composite 4	A	17	DD
Composite 1	B	17	DD	Composite 4	B	20	BG
Composite 1	C	20	JTP	Composite 4	C	19	JTP
Composite 1	D	20	BG	Composite 4	D	19	DD
Composite 1	E	19	DD	Composite 4	E	20	BG

Nereis virens Day 28 Recovery Record

DATE: 09/28/17

ESI STUDY: 29525

CLIENT: AECOM

PROJECT: New Haven

SAMPLE ID	REP	# LIVE	Initials	SAMPLE ID	REP	# LIVE	Initials
Composite 5	A	20	GRS	Composite 7	A	19	JTP
Composite 5	B	19	JTP	Composite 7	B	19	BG
Composite 5	C	18	DL	Composite 7	C	20	DL
Composite 5	D	19	GRS	Composite 7	D	20	JTP
Composite 5	E	20	JTP	Composite 7	E	19	GRS
Composite 6	A	19	GRS	Composite 8	A	19	BG
Composite 6	B	19	JTP	Composite 8	B	20	BG
Composite 6	C	18	BG	Composite 8	C	21	GRS
Composite 6	D	18	JTP	Composite 8	D	19	BG
Composite 6	E	19	GRS	Composite 8	E	19	GRS

⑥10 GRS 0928

Discarded worm found on table.

28 day *Nereis virens*
Sediment Bioaccumulation Evaluation
Statistical Analysis Reports
Survival

CETIS Test Data Worksheet

Report Date: 29 Sep-17 09:53 (p 1 of 2)
Test Code/ID: 18-2782-6607/29525Nv

Bioaccumulation Evaluation - Survival Endpoint					EnviroSystems, Inc.
Start Date:	31 Aug-17	Species:	Nereis virens	Sample Code:	29525-000
End Date:	28 Sep-17	Protocol:	US ACE NED RIM (2004)	Sample Source:	New Haven Harbor FNP -2017
Sample Date:	31 Aug-17	Material:	Laboratory Control Sediment	Sample Station:	Laboratory Control - 29525
Sample	Rep	Pos	# Exposed	# Survived	Notes
29525-000	1	9	20	18	
29525-000	2	13	20	19	
29525-000	3	26	20	19	
29525-000	4	40	20	17	
29525-000	5	44	20	19	
29517-009	1	2	20	19	
29517-009	2	20	20	19	
29517-009	3	23	20	20	
29517-009	4	37	20	19	
29517-009	5	41	20	20	
29517-001	1	4	20	20	
29517-001	2	12	20	17	
29517-001	3	24	20	20	
29517-001	4	31	20	20	
29517-001	5	43	20	19	
29517-002	1	10	20	20	
29517-002	2	16	20	20	
29517-002	3	21	20	19	
29517-002	4	34	20	19	
29517-002	5	49	20	20	
29517-003	1	8	20	19	
29517-003	2	19	20	20	
29517-003	3	22	20	19	
29517-003	4	35	20	20	
29517-003	5	46	20	20	
29517-004	1	5	20	17	
29517-004	2	14	20	20	
29517-004	3	28	20	19	
29517-004	4	38	20	19	
29517-004	5	50	20	20	
29517-005	1	6	20	20	
29517-005	2	17	20	19	
29517-005	3	30	20	18	
29517-005	4	36	20	19	
29517-005	5	47	20	20	
29517-006	1	3	20	19	
29517-006	2	18	20	19	
29517-006	3	27	20	18	
29517-006	4	39	20	18	
29517-006	5	48	20	19	
59517-007	1	7	20	19	
59517-007	2	15	20	19	
59517-007	3	29	20	20	
59517-007	4	32	20	20	
59517-007	5	42	20	19	
29517-008	1	1	20	19	
29517-008	2	11	20	20	

CETIS Test Data Worksheet

Report Date: 29 Sep-17 09:53 (p 2 of 2)
Test Code/ID: 18-2782-6607/29525Nv

Sample	Rep	Pos	# Exposed	# Survived	Notes
29517-008	3	25	21	21	
29517-008	4	33	20	19	
29517-008	5	45	20	19	

CETIS Summary Report

Report Date: 29 Sep-17 10:05 (p 1 of 2)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint						EnviroSystems, Inc.					
Batch ID:	04-0939-0565		Test Type:	Survival			Analyst:	Nancy Roka			
Start Date:	31 Aug-17		Protocol:	US ACE NED RIM (2004)			Diluent:	Not Applicable			
Ending Date:	28 Sep-17		Species:	Nereis virens			Brine:	Not Applicable			
Duration:	28d 0h		Source:	ARO - Aquatic Research Organisms, NH			Age:				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29525-000	10-8256-4737	31 Aug-17	31 Aug-17	n/a	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h							
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29525-000	Laboratory Control Sediment	New Haven Harbor FNP -2017	Laboratory Control - 29525								
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)								
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)								
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)								
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)								
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)								
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)								
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Single Comparison Summary											
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result						
21-0544-2683	Proportion Survived	Equal Variance t Two-Sample Test	0.9713	29517-009	passed proportion survived						
04-0974-0371	Proportion Survived	Equal Variance t Two-Sample Test	0.4278	29517-001	passed proportion survived						
20-8050-7921	Proportion Survived	Equal Variance t Two-Sample Test	0.7102	29517-002	passed proportion survived						
05-5357-1455	Proportion Survived	Equal Variance t Two-Sample Test	0.7102	29517-003	passed proportion survived						
17-8693-4210	Proportion Survived	Equal Variance t Two-Sample Test	0.2886	29517-004	passed proportion survived						
11-6517-3414	Proportion Survived	Equal Variance t Two-Sample Test	0.3509	29517-005	passed proportion survived						
07-0012-5470	Proportion Survived	Equal Variance t Two-Sample Test	0.0252	29517-006	failed proportion survived						
10-9249-9353	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7381	59517-007	passed proportion survived						
04-4959-2982	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7381	29517-008	passed proportion survived						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29525-000	LC	5	0.920	0.864	0.976	0.850	0.950	0.020	0.045	4.86%	0.00%
29517-009	RS	5	0.970	0.936	1.000	0.950	1.000	0.012	0.027	2.82%	-5.43%
29517-001		5	0.960	0.879	1.000	0.850	1.000	0.029	0.065	6.79%	-4.35%
29517-002		5	0.980	0.946	1.000	0.950	1.000	0.012	0.027	2.79%	-6.52%
29517-003		5	0.980	0.946	1.000	0.950	1.000	0.012	0.027	2.79%	-6.52%
29517-004		5	0.950	0.874	1.000	0.850	1.000	0.027	0.061	6.45%	-3.26%
29517-005		5	0.960	0.908	1.000	0.900	1.000	0.019	0.042	4.36%	-4.35%
29517-006		5	0.930	0.896	0.964	0.900	0.950	0.012	0.027	2.94%	-1.09%
59517-007		5	0.970	0.936	1.000	0.950	1.000	0.012	0.027	2.82%	-5.43%
29517-008		5	0.970	0.936	1.000	0.950	1.000	0.012	0.027	2.82%	-5.43%

CETIS Summary Report

Report Date: 29 Sep-17 10:06 (p 2 of 2)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint						EnviroSystems, Inc.
Proportion Survived Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29525-000	LC	0.900	0.950	0.950	0.850	0.950
29517-009	RS	0.950	0.950	1.000	0.950	1.000
29517-001		1.000	0.850	1.000	1.000	0.950
29517-002		1.000	1.000	0.950	0.950	1.000
29517-003		0.950	1.000	0.950	1.000	1.000
29517-004		0.850	1.000	0.950	0.950	1.000
29517-005		1.000	0.950	0.900	0.950	1.000
29517-006		0.950	0.950	0.900	0.900	0.950
59517-007		0.950	0.950	1.000	1.000	0.950
29517-008		0.950	1.000	1.000	0.950	0.950

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 9 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 21-0544-2683			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 9:54			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29525-000	10-8256-4737	31 Aug-17	31 Aug-17	n/a	AECOM	Dredged Sediment Evalu					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29525-000	Laboratory Control Sediment		New Haven Harbor FNP -2017		Laboratory Control - 29525						
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-009 passed proportion survived			4.96%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Reference Sed	-2.22	1.86	0.083	8	CDF	0.9713	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5337	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0245396		0.0245396		1	4.91	0.0575	Non-Significant Effect			
Error	0.0399515		0.0049939		8						
Total	0.0644911				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.59	23.2	0.6661	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.826	0.741	0.0298	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29525-000	LC	5	0.920	0.864	0.976	0.950	0.850	0.950	0.020	4.86%	0.00%
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	-5.43%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29525-000	LC	5	1.29	1.19	1.39	1.35	1.17	1.35	0.035	6.06%	0.00%
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	-7.67%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29525-000	LC	0.900	0.950	0.950	0.850	0.950					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29525-000	LC	1.25	1.35	1.35	1.17	1.35					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 1 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 04-0974-0371			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:04			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Marine Sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)								
Data Transform		Alt Hyp	Comparison Result				PMSD				
Angular (Corrected)		C > T	29517-001 passed proportion survived				5.70%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	0.188	1.86	0.116	8	CDF	0.4278	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.21	2.29	0.0825	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003447		0.0003447		1	0.0353	0.8556	Non-Significant Effect			
Error	0.0780693		0.0097587		8						
Total	0.078414				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.05	23.2	0.2040	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.8	0.741	0.0146	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-001		5	0.960	0.879	1.000	1.000	0.850	1.000	0.029	6.79%	1.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-001		5	1.38	1.22	1.53	1.46	1.17	1.46	0.056	9.07%	0.84%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-001		1.000	0.850	1.000	1.000	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-001		1.46	1.17	1.46	1.46	1.35					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 2 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 20-8050-7921		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:04		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-002 passed proportion survived			3.38%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.577	1.86	0.073	8	CDF	0.7102	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.16	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0012877		0.0012877		1	0.333	0.5796	Non-Significant Effect			
Error	0.0309042		0.0038630		8						
Total	0.0321919				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1	23.2	1.0000	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.799	0.741	0.0142	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-002		5	0.980	0.946	1.000	1.000	0.950	1.000	0.012	2.79%	-1.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-002		5	1.41	1.34	1.49	1.46	1.35	1.46	0.0278	4.40%	-1.63%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-002		1.000	1.000	0.950	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-002		1.46	1.46	1.35	1.35	1.46					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 3 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 05-5357-1455		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:04		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-003 passed proportion survived			3.38%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.577	1.86	0.073	8	CDF	0.7102	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.16	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0012877		0.0012877		1	0.333	0.5796	Non-Significant Effect			
Error	0.0309042		0.0038630		8						
Total	0.0321919				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1	23.2	1.0000	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.799	0.741	0.0142	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-003		5	0.980	0.946	1.000	1.000	0.950	1.000	0.012	2.79%	-1.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-003		5	1.41	1.34	1.49	1.46	1.35	1.46	0.0278	4.40%	-1.63%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-003		0.950	1.000	0.950	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-003		1.35	1.46	1.35	1.46	1.46					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 4 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 17-8693-4210		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:05		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-004 passed proportion survived			5.36%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.581	1.86	0.11	8	CDF	0.2886	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.07	2.29	0.1691	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0029648		0.0029648		1	0.338	0.5772	Non-Significant Effect		
Error		0.0702538		0.0087817		8					
Total		0.0732186				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.55	23.2	0.2477	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.895	0.741	0.1947	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	2.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0523	8.63%	2.48%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-004		0.850	1.000	0.950	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-004		1.17	1.46	1.35	1.35	1.46					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 5 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 11-6517-3414		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:05		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-005 passed proportion survived			4.26%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.397	1.86	0.090	8	CDF	0.3509	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.69	2.29	0.6976	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0009262		0.0009262		1	0.157	0.7019	Non-Significant Effect		
Error		0.0470499		0.0058812		8					
Total		0.0479761				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.04	23.2	0.5055	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.869	0.741	0.0980	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-005		5	0.960	0.908	1.000	0.950	0.900	1.000	0.019	4.36%	1.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-005		5	1.37	1.26	1.48	1.35	1.25	1.46	0.0397	6.48%	1.38%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-005		1.000	0.950	0.900	0.950	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-005		1.46	1.35	1.25	1.35	1.46					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 6 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 07-0012-5470		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:05		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29517-006 failed proportion survived			3.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	2.3	1.86	0.068	8	CDF	0.0252	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.25	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0175918		0.0175918		1	5.3	0.0503	Non-Significant Effect		
Error		0.026566		0.0033208		8					
Total		0.0441578				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.39	23.2	0.7572	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.794	0.741	0.0122	Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-006		5	0.930	0.896	0.964	0.950	0.900	0.950	0.012	2.94%	4.12%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-006		5	1.31	1.24	1.37	1.35	1.25	1.35	0.0236	4.03%	6.03%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-006		0.950	0.950	0.900	0.900	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-006		1.35	1.35	1.25	1.25	1.35					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 7 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 10-9249-9353		Endpoint: Proportion Survived					CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:05		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Marine Sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			59517-007 passed proportion survived			3.38%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	27.5	n/a	3	8	Exact	0.7381	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.16	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0		0		1	0	1.0000	Non-Significant Effect			
Error	0.0309042		0.0038630		8						
Total	0.0309042				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1	23.2	1.0000	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.64	0.741	1.7E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
59517-007		5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
59517-007		5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
59517-007		0.950	0.950	1.000	1.000	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
59517-007		1.35	1.35	1.46	1.46	1.35					

CETIS Analytical Report

Report Date: 29 Sep-17 10:05 (p 8 of 9)
Test Code: 29525Nv | 18-2782-6607

Bioaccumulation Evaluation - Survival Endpoint										EnviroSystems, Inc.	
Analysis ID: 04-4959-2982			Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3				
Analyzed: 29 Sep-17 10:05			Analysis: Nonparametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Marine Sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29517-008 passed proportion survived				3.40%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	27.5	n/a	3	8	Exact	0.7381	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.19	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7.35E-07		7.35E-07		1	0.000188	0.9894	Non-Significant Effect			
Error	0.0312792		0.0039099		8						
Total	0.03128				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.02	23.2	0.9820	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.649	0.741	2.1E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
29517-008		5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.00%
29517-008		5	1.39	1.31	1.47	1.35	1.35	1.46	0.0281	4.52%	-0.04%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.950	0.950	1.000	0.950	1.000					
29517-008		0.950	1.000	1.000	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.35	1.35	1.46	1.35	1.46					
29517-008		1.35	1.46	1.46	1.35	1.35					

28 day *Macoma nasuta*
Sediment Bioaccumulation Evaluation

Body Burden Data and Statistical Analysis Reports

Trace Metals

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	3.53		3.07		3.54		3.70		2.16	
Cadmium	0.023 J		0.029 J		0.033 J		0.035 J		0.019 J	
Chromium	0.165 J		0.470		0.182 J		0.314 J		0.094 J	
Copper	2.27		1.70		1.75		2.38		1.24	
Lead	0.290		0.494		0.323		0.448		0.185	
Mercury	0.004 U		0.004 J		0.003 U		0.003 U		0.004 U	
Nickel	0.459		0.508		0.324		0.429		0.215	
Zinc	9.66		12.30		11.00		13.70		9.30	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 1		REP4	*	REP5	*
					REP3	*				
Metals (ug/g wet weight)										
Arsenic	1.36		3.73		2.89		2.12		2.07	
Cadmium	0.012 J		0.042		0.016 J		0.016 J		0.016 J	
Chromium	0.067 J		0.255 J		0.208 J		0.116 J		0.085 J	
Copper	0.70		2.17		1.62		0.91		1.01	
Lead	0.095		0.339		0.231		0.174		0.123	
Mercury	0.003 U		0.004 U		0.004 U		0.003 U		0.004 U	
Nickel	0.141		0.326		0.273		0.222		0.174	
Zinc	5.64		14.60		9.80		6.24		5.68	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.36		2.48		1.05		1.91		2.53	
Cadmium	0.034 J		0.023 J		0.016 J		0.021 J		0.023 J	
Chromium	0.218 J		0.178 J		0.131 J		0.214 J		0.401	
Copper	1.35		1.72		0.99		1.79		2.45	
Lead	0.290		0.194		0.154		0.215		0.649	
Mercury	0.004 U		0.004 U		0.004 U		0.004 U		0.006 J	
Nickel	0.347		0.245		0.154		0.277		0.366	
Zinc	8.64		6.90		4.72		6.95		9.93	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	REP1	*	REP2	*	Composite 3		REP4	*	REP5
					REP3	*			
Metals (ug/g wet weight)									
Arsenic	1.63		1.20		2.11		3.05		2.78
Cadmium	0.030 J		0.013 J		0.029 J		0.027 J		0.025 J
Chromium	0.115 J		0.084 J		0.160 J		0.544		0.230 J
Copper	1.39		0.92		1.06		2.40		1.62
Lead	0.243		0.171		0.231		0.514		0.265
Mercury	0.003 U		0.004 U		0.004 U		0.004 J		0.004 J
Nickel	0.168		0.159		0.261		0.408		0.285
Zinc	6.50		4.85		7.67		11.50		10.60
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below F									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	REP1	*	REP2	*	Composite 4		REP4	*	REP5
					REP3	*			
Metals (ug/g wet weight)									
Arsenic	2.88		3.06		1.92		1.87		2.28
Cadmium	0.046		0.041		0.018 J		0.069		0.050
Chromium	0.701		0.487		0.168 J		0.424		0.299 J
Copper	3.13		2.44		1.08		3.36		2.30
Lead	0.790		0.643		0.291		0.663		0.560
Mercury	0.009 J		0.005 J		0.003 U		0.003 U		0.004 U
Nickel	0.480		0.422		0.238		0.301		0.320
Zinc	12.10		11.30		6.54		14.40		16.80
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below F									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	Composite 5								
	REP1	*	REP2	*	REP3	*	REP4	*	REP5
Metals (ug/g wet weight)									
Arsenic	1.90		2.42		2.03		2.39		2.17
Cadmium	0.038 J		0.028 J		0.029 J		0.031 J		0.060
Chromium	0.268 J		0.222 J		0.228 J		0.207 J		0.390 J
Copper	11.30		1.76		1.72		2.25		2.34
Lead	0.469		0.292		0.281		0.360		0.541
Mercury	0.004 U		0.003 U		0.004 U		0.004 U		0.004 U
Nickel	0.320		0.351		0.274		0.303		0.417
Zinc	9.88		9.46		10.90		11.70		12.90
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below F									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	Composite 6								
	REP1	*	REP2	*	REP3	*	REP4	*	REP5
Metals (ug/g wet weight)									
Arsenic	2.16		1.43		1.19		1.71		1.77
Cadmium	0.070		0.056		0.050		0.079		0.058
Chromium	0.973		0.614		0.720		0.660		0.606
Copper	3.42		2.57		3.27		2.96		2.73
Lead	1.040		0.685		0.911		0.795		0.691
Mercury	0.004 U		0.004 U		0.004 U		0.004 U		0.003 U
Nickel	0.502		0.326		0.395		0.448		0.368
Zinc	13.70		11.30		12.10		12.40		14.20
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below F									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	Composite 7								
	REP1	*	REP2	*	REP3	*	REP4	*	REP5
Metals (ug/g wet weight)									
Arsenic	2.28		2.53		1.63		2.13		2.94
Cadmium	0.054		0.069		0.038		0.040		0.026 J
Chromium	0.789		0.461		0.254 J		0.622		0.342 J
Copper	3.22		2.38		1.71		2.18		3.60
Lead	0.964		0.725		0.378		0.902		0.534
Mercury	0.004 U		0.004 U		0.003 U		0.003 U		0.005 J
Nickel	0.431		0.457		0.269		0.324		0.342
Zinc	11.50		11.60		7.00		13.30		9.53
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below F									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.06		2.53		1.02		2.90		3.15	
Cadmium	0.034 J		0.074		0.026 J		0.039		0.036 J	
Chromium	0.743		0.618		0.452		0.330 J		0.527	
Copper	2.38		3.11		2.22		2.52		2.45	
Lead	0.828		0.891		0.564		0.588		0.546	
Mercury	0.004 J		0.005 J		0.003 U		0.003 U		0.005 J	
Nickel	0.404		0.411		0.288		0.332		0.523	
Zinc	8.95		12.00		8.72		13.70		12.50	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:25 (p 1 of 2)
Test Code/ID: 06-3864-7022/29524Mn-Met

Bioaccumulation Evaluation - Metals - Macoma											EnviroSystems, Inc.
Start Date: 29 Aug-17			Species: Macoma nasuta			Sample Code: 29524-000					
End Date: 26 Sep-17			Protocol: US ACE NED RIM (2004)			Sample Source: New Haven Harbor FNP -2017					
Sample Date: 29 Aug-17			Material: Laboratory Control Sediment			Sample Station: Laboratory Control - 29524					
Sample	Rep	Pos	Body Burden	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
29524-000	1	9									
29524-000	2	19									
29524-000	3	26									
29524-000	4	38									
29524-000	5	49									
29517-009	1	2		3.53	0.023	0.165	2.27	0.29	0.004	0.459	9.66
29517-009	2	12		3.07	0.029	0.47	1.7	0.494	0.004	0.508	12.3
29517-009	3	27		3.54	0.033	0.182	1.75	0.323	0.003	0.324	11
29517-009	4	35		3.7	0.035	0.314	2.38	0.448	0.003	0.429	13.7
29517-009	5	44		2.16	0.019	0.094	1.24	0.185	0.004	0.215	9.3
29517-001	1	7		1.36	0.012	0.067	0.699	0.095	0.003	0.141	5.64
29517-001	2	13		3.73	0.042	0.255	2.17	0.339	0.004	0.326	14.6
29517-001	3	23		2.89	0.016	0.208	1.62	0.231	0.004	0.273	9.8
29517-001	4	40		2.12	0.016	0.116	0.907	0.174	0.003	0.222	6.24
29517-001	5	50		2.07	0.016	0.085	1.01	0.123	0.004	0.174	5.68
29517-002	1	3		2.36	0.034	0.218	1.35	0.29	0.004	0.347	8.64
29517-002	2	17		2.48	0.023	0.178	1.72	0.194	0.004	0.245	6.9
29517-002	3	25		1.05	0.016	0.131	0.993	0.154	0.004	0.154	4.72
29517-002	4	36		1.91	0.021	0.214	1.79	0.215	0.004	0.277	6.95
29517-002	5	41		2.53	0.023	0.401	2.45	0.649	0.006	0.366	9.93
29517-003	1	1		1.63	0.03	0.115	1.39	0.243	0.003	0.168	6.5
29517-003	2	11		1.2	0.013	0.084	0.92	0.171	0.004	0.159	4.85
29517-003	3	28		2.11	0.029	0.16	1.06	0.231	0.004	0.261	7.67
29517-003	4	33		3.05	0.027	0.544	2.4	0.514	0.004	0.408	11.5
29517-003	5	42		2.78	0.025	0.23	1.62	0.265	0.004	0.285	10.6
29517-004	1	10		2.88	0.046	0.701	3.13	0.79	0.009	0.48	12.1
29517-004	2	15		3.06	0.041	0.487	2.44	0.643	0.005	0.422	11.3
29517-004	3	22		1.92	0.018	0.168	1.08	0.291	0.003	0.238	6.54
29517-004	4	37		1.87	0.069	0.424	3.36	0.663	0.003	0.301	14.4
29517-004	5	48		2.28	0.05	0.299	2.3	0.56	0.004	0.32	16.8
29517-005	1	4		1.9	0.038	0.268	11.3	0.469	0.004	0.32	9.88
29517-005	2	14		2.42	0.028	0.222	1.76	0.292	0.003	0.351	9.46

002-158-534-3

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Analyst: _____ QA: _____

New Haven Harbor FNP Tier III Sediment Evaluation. 28 day Toxicity and Bioaccumulation Evaluation.
US ACE New England District. ESI Studies 29524/29525. August 2017.

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CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:25 (p 2 of 2)
Test Code/ID: 06-3864-7022/29524Mn-Met

Sample	Rep	Pos	Body Burden	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
29517-005	3	24		2.03	0.029	0.228	1.72	0.281	0.004	0.274	10.9
29517-005	4	39		2.39	0.031	0.207	2.25	0.36	0.004	0.303	11.7
29517-005	5	43		2.17	0.06	0.39	2.34	0.541	0.004	0.417	12.9
29517-006	1	5		2.16	0.07	0.973	3.42	1.04	0.004	0.502	13.7
29517-006	2	16		1.43	0.056	0.614	2.57	0.685	0.004	0.326	11.3
29517-006	3	30		1.19	0.05	0.72	3.27	0.911	0.004	0.395	12.1
29517-006	4	32		1.71	0.079	0.66	2.96	0.795	0.004	0.448	12.4
29517-006	5	45		1.77	0.058	0.606	2.73	0.691	0.003	0.368	14.2
59517-007	1	8		2.28	0.054	0.789	3.22	0.964	0.004	0.431	11.5
59517-007	2	20		2.53	0.069	0.461	2.38	0.725	0.004	0.457	11.6
59517-007	3	21		1.63	0.038	0.254	1.71	0.378	0.003	0.269	7
59517-007	4	34		2.13	0.04	0.622	2.18	0.902	0.003	0.324	13.3
59517-007	5	46		2.94	0.026	0.342	3.6	0.534	0.005	0.342	9.53
29517-008	1	6		2.06	0.034	0.743	2.38	0.828	0.004	0.404	8.95
29517-008	2	18		2.53	0.074	0.618	3.11	0.891	0.005	0.411	12
29517-008	3	29		1.02	0.026	0.452	2.22	0.564	0.003	0.288	8.72
29517-008	4	31		2.9	0.039	0.33	2.52	0.588	0.003	0.332	13.7
29517-008	5	47		3.15	0.036	0.527	2.45	0.546	0.005	0.523	12.5

CETIS Summary Report

Report Date: 10 Nov-17 12:27 (p 1 of 6)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma					EnviroSystems, Inc.	
Batch ID:	00-9267-2798	Test Type:	Bioaccumulation - Metals	Analyst:	Nancy Roka	
Start Date:	29 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	26 Sep-17	Species:	Macoma nasuta	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
03-9789-2208	Arsenic	Equal Variance t Two-Sample Test	0.9209	29517-001	passed arsenic	
15-7219-6448	Arsenic	Wilcoxon Rank Sum Two-Sample Test	0.9841	29517-002	passed arsenic	
02-4665-5128	Arsenic	Equal Variance t Two-Sample Test	0.9767	29517-003	passed arsenic	
03-6174-9470	Arsenic	Equal Variance t Two-Sample Test	0.9679	29517-004	passed arsenic	
11-6568-5587	Arsenic	Equal Variance t Two-Sample Test	0.9999	29517-005	passed arsenic	
13-5025-2761	Arsenic	Equal Variance t Two-Sample Test	0.9954	29517-005	passed arsenic	
16-5406-3371	Arsenic	Equal Variance t Two-Sample Test	0.9993	29517-006	passed arsenic	
04-4448-0551	Arsenic	Equal Variance t Two-Sample Test	0.9825	59517-007	passed arsenic	
16-7942-3108	Arsenic	Equal Variance t Two-Sample Test	0.9493	29517-008	passed arsenic	
11-2964-2937	Cadmium	Equal Variance t Two-Sample Test	0.8655	29517-001	passed cadmium	
16-5805-6583	Cadmium	Equal Variance t Two-Sample Test	0.9958	29517-001	passed cadmium	
10-7264-5174	Cadmium	Equal Variance t Two-Sample Test	0.8369	29517-002	passed cadmium	
19-5402-5177	Cadmium	Equal Variance t Two-Sample Test	0.7475	29517-003	passed cadmium	
07-4498-6793	Cadmium	Equal Variance t Two-Sample Test	0.0438	29517-004	failed cadmium	
00-5439-8566	Cadmium	Equal Variance t Two-Sample Test	0.0984	29517-005	passed cadmium	
13-8508-1911	Cadmium	Equal Variance t Two-Sample Test	0.1896	29517-005	passed cadmium	
14-4636-9482	Cadmium	Equal Variance t Two-Sample Test	2.1E-04	29517-006	failed cadmium	
00-3439-0780	Cadmium	Equal Variance t Two-Sample Test	0.0292	59517-007	failed cadmium	
08-9273-2454	Cadmium	Equal Variance t Two-Sample Test	0.0763	29517-008	passed cadmium	
18-8338-2574	Cadmium	Equal Variance t Two-Sample Test	0.0994	29517-008	passed cadmium	
08-9206-1868	Chromium	Equal Variance t Two-Sample Test	0.8854	29517-001	passed chromium	
17-9766-5574	Chromium	Equal Variance t Two-Sample Test	0.5788	29517-002	passed chromium	
04-5638-9323	Chromium	Equal Variance t Two-Sample Test	0.5665	29517-003	passed chromium	
02-8335-4885	Chromium	Equal Variance t Two-Sample Test	0.0826	29517-004	passed chromium	
20-5196-6544	Chromium	Equal Variance t Two-Sample Test	0.4075	29517-005	passed chromium	
20-2459-8135	Chromium	Equal Variance t Two-Sample Test	5.6E-04	29517-006	failed chromium	
18-5664-9504	Chromium	Equal Variance t Two-Sample Test	0.0332	59517-007	failed chromium	

CETIS Summary Report

Report Date: 10 Nov-17 12:27 (p 2 of 6)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
20-2534-3836	Chromium	Equal Variance t Two-Sample Test	0.0088	29517-008 failed chromium
04-1480-6470	Copper	Equal Variance t Two-Sample Test	0.9385	29517-001 passed copper
06-5337-8561	Copper	Equal Variance t Two-Sample Test	0.7326	29517-002 passed copper
03-2532-1009	Copper	Equal Variance t Two-Sample Test	0.8621	29517-003 passed copper
07-0927-2506	Copper	Equal Variance t Two-Sample Test	0.1117	29517-004 passed copper
18-0037-4622	Copper	Equal Variance t Two-Sample Test	0.3015	29517-005 passed copper
12-5786-7257	Copper	Wilcoxon Rank Sum Two-Sample Test	0.2103	29517-005 passed copper
07-6006-3237	Copper	Equal Variance t Two-Sample Test	0.0013	29517-006 failed copper
13-1422-5304	Copper	Equal Variance t Two-Sample Test	0.0501	59517-007 passed copper
17-7436-3360	Copper	Equal Variance t Two-Sample Test	0.0158	29517-008 failed copper
00-8620-7595	Lead	Equal Variance t Two-Sample Test	0.9708	29517-001 passed lead
10-0190-2342	Lead	Equal Variance t Two-Sample Test	0.6678	29517-002 passed lead
01-0051-3876	Lead	Equal Variance t Two-Sample Test	0.7702	29517-003 passed lead
05-2982-6827	Lead	Equal Variance t Two-Sample Test	0.0212	29517-004 failed lead
07-1060-0664	Lead	Equal Variance t Two-Sample Test	0.3021	29517-005 passed lead
07-9890-7569	Lead	Equal Variance t Two-Sample Test	3.1E-04	29517-006 failed lead
05-5033-9783	Lead	Equal Variance t Two-Sample Test	0.0106	59517-007 failed lead
20-3608-2340	Lead	Equal Variance t Two-Sample Test	0.0032	29517-008 failed lead
09-1685-1691	Mercury	Wilcoxon Rank Sum Two-Sample Test	0.7381	29517-001 passed mercury
06-6464-5453	Mercury	Equal Variance t Two-Sample Test	0.0632	29517-002 passed mercury
02-5806-3695	Mercury	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-003 passed mercury
00-9845-7069	Mercury	Equal Variance t Two-Sample Test	0.1617	29517-004 passed mercury
05-9866-4620	Mercury	Equal Variance t Two-Sample Test	0.3873	29517-004 passed mercury
01-0822-3772	Mercury	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-005 passed mercury
04-2183-1904	Mercury	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-006 passed mercury
10-4946-2817	Mercury	Equal Variance t Two-Sample Test	0.3333	59517-007 passed mercury
15-9217-6955	Mercury	Equal Variance t Two-Sample Test	0.2277	29517-008 passed mercury
00-3959-6603	Nickel	Equal Variance t Two-Sample Test	0.9835	29517-001 passed nickel
08-4134-9087	Nickel	Equal Variance t Two-Sample Test	0.9346	29517-002 passed nickel
05-1112-9782	Nickel	Equal Variance t Two-Sample Test	0.9519	29517-003 passed nickel
03-0683-3610	Nickel	Equal Variance t Two-Sample Test	0.6882	29517-004 passed nickel
09-6196-3972	Nickel	Equal Variance t Two-Sample Test	0.8108	29517-005 passed nickel
09-9345-5623	Nickel	Equal Variance t Two-Sample Test	0.3707	29517-006 passed nickel
02-8445-8041	Nickel	Equal Variance t Two-Sample Test	0.6343	59517-007 passed nickel
11-3251-6430	Nickel	Equal Variance t Two-Sample Test	0.4731	29517-008 passed nickel
15-0146-5800	Zinc	Equal Variance t Two-Sample Test	0.9088	29517-001 passed zinc
16-2242-8017	Zinc	Equal Variance t Two-Sample Test	0.9929	29517-002 passed zinc
16-1228-1719	Zinc	Equal Variance t Two-Sample Test	0.9591	29517-003 passed zinc
16-8440-3977	Zinc	Equal Variance t Two-Sample Test	0.3004	29517-004 passed zinc
11-5027-7404	Zinc	Equal Variance t Two-Sample Test	0.5834	29517-005 passed zinc
04-4194-8712	Zinc	Equal Variance t Two-Sample Test	0.0761	29517-006 passed zinc
19-5054-9598	Zinc	Equal Variance t Two-Sample Test	0.6668	59517-007 passed zinc
07-1405-7297	Zinc	Equal Variance t Two-Sample Test	0.5054	29517-008 passed zinc

CETIS Summary Report

Report Date: 10 Nov-17 12:27 (p 3 of 6)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma											EnviroSystems, Inc.
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98	2.16	3.7	0.28	0.627	19.60%	0.00%
29517-001		5	2.43	1.31	3.56	1.36	3.73	0.404	0.904	37.16%	23.94%
29517-002		5	2.07	1.3	2.83	1.05	2.53	0.277	0.618	29.93%	35.44%
29517-003		5	2.15	1.2	3.11	1.2	3.05	0.345	0.772	35.82%	32.69%
29517-004		5	2.4	1.72	3.08	1.87	3.06	0.244	0.546	22.72%	24.94%
29517-005		5	2.18	1.9	2.46	1.9	2.42	0.101	0.225	10.32%	31.81%
29517-006		5	1.65	1.2	2.11	1.19	2.16	0.164	0.367	22.20%	48.37%
59517-007		5	2.3	1.7	2.9	1.63	2.94	0.217	0.485	21.07%	28.06%
29517-008		5	2.33	1.29	3.38	1.02	3.15	0.376	0.841	36.05%	27.13%
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361	0.019	0.035	0.00301	0.00672	24.18%	0.00%
29517-001		5	0.0204	0.00525	0.0355	0.012	0.042	0.00546	0.0122	59.80%	26.62%
29517-002		5	0.0234	0.0152	0.0316	0.016	0.034	0.00294	0.00658	28.12%	15.83%
29517-003		5	0.0248	0.0163	0.0333	0.013	0.03	0.00307	0.00687	27.70%	10.79%
29517-004		5	0.0448	0.022	0.0676	0.018	0.069	0.00821	0.0183	40.96%	-61.15%
29517-005		5	0.0372	0.0206	0.0538	0.028	0.06	0.00596	0.0133	35.83%	-33.81%
29517-006		5	0.0626	0.0481	0.0771	0.05	0.079	0.00523	0.0117	18.68%	-125.18%
59517-007		5	0.0454	0.0249	0.0659	0.026	0.069	0.00739	0.0165	36.38%	-63.31%
29517-008		5	0.0418	0.0187	0.0649	0.026	0.074	0.00833	0.0186	44.58%	-50.36%
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43	0.094	0.47	0.0665	0.149	60.73%	0.00%
29517-001		5	0.146	0.045	0.247	0.067	0.255	0.0365	0.0815	55.76%	40.33%
29517-002		5	0.228	0.101	0.356	0.131	0.401	0.0459	0.103	44.94%	6.78%
29517-003		5	0.227	-0.00401	0.457	0.084	0.544	0.0831	0.186	81.96%	7.51%
29517-004		5	0.416	0.166	0.665	0.168	0.701	0.0899	0.201	48.33%	-69.71%
29517-005		5	0.263	0.171	0.355	0.207	0.39	0.0333	0.0745	28.32%	-7.35%
29517-006		5	0.715	0.527	0.903	0.606	0.973	0.0677	0.151	21.19%	-191.67%
59517-007		5	0.494	0.226	0.761	0.254	0.789	0.0962	0.215	43.59%	-101.47%
29517-008		5	0.534	0.339	0.729	0.33	0.743	0.0704	0.157	29.48%	-117.96%
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44	1.24	2.38	0.207	0.464	24.83%	0.00%
29517-001		5	1.28	0.532	2.03	0.699	2.17	0.27	0.604	47.11%	31.41%
29517-002		5	1.66	0.985	2.34	0.993	2.45	0.243	0.544	32.78%	11.10%
29517-003		5	1.48	0.753	2.2	0.92	2.4	0.261	0.584	39.51%	20.88%
29517-004		5	2.46	1.35	3.57	1.08	3.36	0.399	0.893	36.27%	-31.80%
29517-005		5	3.87	-1.29	9.04	1.72	11.3	1.86	4.16	107.40%	-107.39%
29517-006		5	2.99	2.55	3.43	2.57	3.42	0.159	0.356	11.92%	-60.06%
59517-007		5	2.62	1.66	3.58	1.71	3.6	0.346	0.775	29.59%	-40.15%
29517-008		5	2.54	2.11	2.96	2.22	3.11	0.152	0.34	13.39%	-35.76%

CETIS Summary Report

Report Date: 10 Nov-17 12:27 (p 4 of 6)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma											EnviroSystems, Inc.
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502	0.185	0.494	0.0556	0.124	35.74%	0.00%
29517-001		5	0.192	0.072	0.313	0.095	0.339	0.0434	0.097	50.41%	44.71%
29517-002		5	0.3	0.0508	0.55	0.154	0.649	0.0899	0.201	66.93%	13.68%
29517-003		5	0.285	0.12	0.45	0.171	0.514	0.0594	0.133	46.62%	18.16%
29517-004		5	0.589	0.358	0.82	0.291	0.79	0.0832	0.186	31.56%	-69.37%
29517-005		5	0.389	0.248	0.529	0.281	0.541	0.0507	0.113	29.18%	-11.67%
29517-006		5	0.824	0.636	1.01	0.685	1.04	0.0679	0.152	18.40%	-136.90%
59517-007		5	0.701	0.395	1.01	0.378	0.964	0.11	0.246	35.13%	-101.32%
29517-008		5	0.683	0.481	0.886	0.546	0.891	0.0729	0.163	23.85%	-96.38%
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428	0.003	0.004	0.000245	0.000548	15.21%	0.00%
29517-001		5	0.0036	0.00292	0.00428	0.003	0.004	0.000245	0.000548	15.21%	0.00%
29517-002		5	0.0044	0.00329	0.00551	0.004	0.006	0.0004	0.000894	20.33%	-22.22%
29517-003		5	0.0038	0.00324	0.00436	0.003	0.004	0.0002	0.000447	11.77%	-5.56%
29517-004		5	0.0048	0.00171	0.00789	0.003	0.009	0.00111	0.00249	51.87%	-33.33%
29517-005		5	0.0038	0.00324	0.00436	0.003	0.004	0.0002	0.000447	11.77%	-5.56%
29517-006		5	0.0038	0.00324	0.00436	0.003	0.004	0.0002	0.000447	11.77%	-5.56%
59517-007		5	0.0038	0.00276	0.00484	0.003	0.005	0.000374	0.000837	22.02%	-5.56%
29517-008		5	0.004	0.00276	0.00524	0.003	0.005	0.000447	0.001	25.00%	-11.11%
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533	0.215	0.508	0.0525	0.117	30.34%	0.00%
29517-001		5	0.227	0.135	0.32	0.141	0.326	0.0333	0.0744	32.75%	41.29%
29517-002		5	0.278	0.172	0.383	0.154	0.366	0.0381	0.0851	30.64%	28.22%
29517-003		5	0.256	0.13	0.382	0.159	0.408	0.0453	0.101	39.58%	33.80%
29517-004		5	0.352	0.231	0.473	0.238	0.48	0.0435	0.0973	27.64%	8.99%
29517-005		5	0.333	0.265	0.401	0.274	0.417	0.0244	0.0546	16.40%	13.95%
29517-006		5	0.408	0.322	0.493	0.326	0.502	0.0308	0.0688	16.87%	-5.37%
59517-007		5	0.365	0.268	0.461	0.269	0.457	0.0348	0.0779	21.35%	5.79%
29517-008		5	0.392	0.28	0.503	0.288	0.523	0.0401	0.0896	22.87%	-1.19%
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5	9.3	13.7	0.821	1.84	16.40%	0.00%
29517-001		5	8.39	3.58	13.2	5.64	14.6	1.73	3.88	46.18%	25.02%
29517-002		5	7.43	4.98	9.88	4.72	9.93	0.882	1.97	26.56%	33.63%
29517-003		5	8.22	4.77	11.7	4.85	11.5	1.25	2.79	33.87%	26.52%
29517-004		5	12.2	7.47	17	6.54	16.8	1.72	3.84	31.37%	-9.26%
29517-005		5	11	9.24	12.7	9.46	12.9	0.622	1.39	12.68%	2.00%
29517-006		5	12.7	11.3	14.2	11.3	14.2	0.532	1.19	9.33%	-13.83%
59517-007		5	10.6	7.6	13.6	7	13.3	1.08	2.41	22.75%	5.41%
29517-008		5	11.2	8.41	13.9	8.72	13.7	0.995	2.22	19.91%	0.16%

CETIS Summary Report

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma						EnviroSystems, Inc.
Arsenic Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	3.53	3.07	3.54	3.7	2.16
29517-001		1.36	3.73	2.89	2.12	2.07
29517-002		2.36	2.48	1.05	1.91	2.53
29517-003		1.63	1.2	2.11	3.05	2.78
29517-004		2.88	3.06	1.92	1.87	2.28
29517-005		1.9	2.42	2.03	2.39	2.17
29517-006		2.16	1.43	1.19	1.71	1.77
59517-007		2.28	2.53	1.63	2.13	2.94
29517-008		2.06	2.53	1.02	2.9	3.15
Cadmium Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.023	0.029	0.033	0.035	0.019
29517-001		0.012	0.042	0.016	0.016	0.016
29517-002		0.034	0.023	0.016	0.021	0.023
29517-003		0.03	0.013	0.029	0.027	0.025
29517-004		0.046	0.041	0.018	0.069	0.05
29517-005		0.038	0.028	0.029	0.031	0.06
29517-006		0.07	0.056	0.05	0.079	0.058
59517-007		0.054	0.069	0.038	0.04	0.026
29517-008		0.034	0.074	0.026	0.039	0.036
Chromium Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.165	0.47	0.182	0.314	0.094
29517-001		0.067	0.255	0.208	0.116	0.085
29517-002		0.218	0.178	0.131	0.214	0.401
29517-003		0.115	0.084	0.16	0.544	0.23
29517-004		0.701	0.487	0.168	0.424	0.299
29517-005		0.268	0.222	0.228	0.207	0.39
29517-006		0.973	0.614	0.72	0.66	0.606
59517-007		0.789	0.461	0.254	0.622	0.342
29517-008		0.743	0.618	0.452	0.33	0.527
Copper Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	2.27	1.7	1.75	2.38	1.24
29517-001		0.699	2.17	1.62	0.907	1.01
29517-002		1.35	1.72	0.993	1.79	2.45
29517-003		1.39	0.92	1.06	2.4	1.62
29517-004		3.13	2.44	1.08	3.36	2.3
29517-005		11.3	1.76	1.72	2.25	2.34
29517-006		3.42	2.57	3.27	2.96	2.73
59517-007		3.22	2.38	1.71	2.18	3.6
29517-008		2.38	3.11	2.22	2.52	2.45

CETIS Summary Report

Report Date: 10 Nov-17 12:27 (p 6 of 6)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma						EnviroSystems, Inc.
Lead Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.29	0.494	0.323	0.448	0.185
29517-001		0.095	0.339	0.231	0.174	0.123
29517-002		0.29	0.194	0.154	0.215	0.649
29517-003		0.243	0.171	0.231	0.514	0.265
29517-004		0.79	0.643	0.291	0.663	0.56
29517-005		0.469	0.292	0.281	0.36	0.541
29517-006		1.04	0.685	0.911	0.795	0.691
59517-007		0.964	0.725	0.378	0.902	0.534
29517-008		0.828	0.891	0.564	0.588	0.546
Mercury Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.004	0.004	0.003	0.003	0.004
29517-001		0.003	0.004	0.004	0.003	0.004
29517-002		0.004	0.004	0.004	0.004	0.006
29517-003		0.003	0.004	0.004	0.004	0.004
29517-004		0.009	0.005	0.003	0.003	0.004
29517-005		0.004	0.003	0.004	0.004	0.004
29517-006		0.004	0.004	0.004	0.004	0.003
59517-007		0.004	0.004	0.003	0.003	0.005
29517-008		0.004	0.005	0.003	0.003	0.005
Nickel Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.459	0.508	0.324	0.429	0.215
29517-001		0.141	0.326	0.273	0.222	0.174
29517-002		0.347	0.245	0.154	0.277	0.366
29517-003		0.168	0.159	0.261	0.408	0.285
29517-004		0.48	0.422	0.238	0.301	0.32
29517-005		0.32	0.351	0.274	0.303	0.417
29517-006		0.502	0.326	0.395	0.448	0.368
59517-007		0.431	0.457	0.269	0.324	0.342
29517-008		0.404	0.411	0.288	0.332	0.523
Zinc Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.66	12.3	11	13.7	9.3
29517-001		5.64	14.6	9.8	6.24	5.68
29517-002		8.64	6.9	4.72	6.95	9.93
29517-003		6.5	4.85	7.67	11.5	10.6
29517-004		12.1	11.3	6.54	14.4	16.8
29517-005		9.88	9.46	10.9	11.7	12.9
29517-006		13.7	11.3	12.1	12.4	14.2
59517-007		11.5	11.6	7	13.3	9.53
29517-008		8.95	12	8.72	13.7	12.5

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 1 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-9789-2208		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed arsenic			28.60%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.56	1.86	0.915	8	CDF	0.9209	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5554	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.46689		1.46689		1	2.42	0.1583	Non-Significant Effect		
Error		4.84512		0.60564		8					
Total		6.31201				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.08	23.2	0.4955	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.946	0.741	0.6207	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-001		5	2.43	1.31	3.56		1.36	3.73	0.404	37.16%	23.94%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-001		1.36	3.73	2.89	2.12	2.07					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 2 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-7219-6448		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed arsenic			22.89%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	37	n/a	0	8	Exact	0.9841	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5466	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		3.21489		3.21489		1	8.29	0.0205	Significant Effect		
Error		3.10272		0.38784		8					
Total		6.31761				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.03	23.2	0.9791	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.776	0.741	0.0074	Non-Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-002		5	2.07	1.3	2.83		1.05	2.53	0.277	29.93%	35.44%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-002		2.36	2.48	1.05	1.91	2.53					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-4665-5128		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 passed arsenic			25.84%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-2.35	1.86	0.827	8	CDF	0.9767	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9857		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.73529		2.73529		1	5.53	0.0465	Significant Effect			
Error	3.95432		0.49429		8						
Total	6.68961				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.51	23.2	0.6976		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.935	0.741	0.4973		Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-003		5	2.15	1.2	3.11		1.2	3.05	0.345	35.82%	32.69%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-003		1.63	1.2	2.11	3.05	2.78					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-6174-9470		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed arsenic			21.61%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-2.15	1.86	0.691	8	CDF	0.9679	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.88	2.29	0.3810	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.59201		1.59201		1	4.61	0.0641	Non-Significant Effect		
Error		2.76468		0.345585		8					
Total		4.35669				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.32	23.2	0.7944	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.921	0.741	0.3612	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-004		5	2.4	1.72	3.08		1.87	3.06	0.244	22.72%	24.94%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-004		2.88	3.06	1.92	1.87	2.28					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-5025-2761		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed arsenic			17.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.42	1.86	0.554	8	CDF	0.9954	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.34	2.29	0.0347	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.59081		2.59081		1	11.7	0.0091	Significant Effect		
Error		1.77568		0.22196		8					
Total		4.36649				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7.76	23.2	0.0722	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.874	0.741	0.1100	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-005		5	2.18	1.9	2.46		1.9	2.42	0.101	10.32%	31.81%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-005		1.9	2.42	2.03	2.39	2.17					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-6568-5587		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed arsenic				9.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-7.74	1.89	0.313	7	CDF	0.9999	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.62952		3.62952		1	60	1.1E-04	Significant Effect			
Error	0.42368		0.0605257		7						
Total	4.0532				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.45	24.3	0.7059	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.906	0.701	0.2891	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	3.46	3.03	3.89		3.07	3.7	0.136	7.84%	0.00%
29517-005		5	2.18	1.9	2.46		1.9	2.42	0.101	10.32%	36.94%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	Outlier					
29517-005		1.9	2.42	2.03	2.39	2.17					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-5406-3371		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed arsenic				18.88%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-4.76	1.86	0.604	8	CDF	0.9993	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.15	2.29	0.1167	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		5.99076		5.99076		1	22.7	0.0014	Significant Effect		
Error		2.11108		0.263885		8					
Total		8.10184				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.92	23.2	0.3236	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.907	0.741	0.2626	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-006		5	1.65	1.2	2.11		1.19	2.16	0.164	22.20%	48.37%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-006		2.16	1.43	1.19	1.71	1.77					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-4448-0551		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed arsenic			20.60%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-2.53	1.86	0.659	8	CDF	0.9825	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.97	2.29	0.2678		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.01601		2.01601		1	6.42	0.0351	Significant Effect			
Error	2.51368		0.31421		8						
Total	4.52969				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.67	23.2	0.6306		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.925	0.741	0.3967		Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
59517-007		5	2.3	1.7	2.9		1.63	2.94	0.217	21.07%	28.06%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
59517-007		2.28	2.53	1.63	2.13	2.94					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-7942-3108		Endpoint: Arsenic					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed arsenic			27.25%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-1.85	1.86	0.872	8	CDF	0.9493	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.88	2.29	0.3808		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.88356		1.88356		1	3.43	0.1014	Non-Significant Effect			
Error	4.39928		0.54991		8						
Total	6.28284				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.8	23.2	0.5842		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.891	0.741	0.1726		Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	3.2	2.42	3.98		2.16	3.7	0.28	19.60%	0.00%
29517-008		5	2.33	1.29	3.38		1.02	3.15	0.376	36.05%	27.13%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	3.53	3.07	3.54	3.7	2.16					
29517-008		2.06	2.53	1.02	2.9	3.15					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-2964-2937		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed cadmium			41.67%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.19	1.86	0.012	8	CDF	0.8655	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.33	2.29	0.0388		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001369		0.0001369		1	1.41	0.2689	Non-Significant Effect			
Error	0.000776		0.000097		8						
Total	0.0009129				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.29	23.2	0.2751		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.832	0.741	0.0350		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-001		5	0.0204	0.00525	0.0355		0.012	0.042	0.00546	59.80%	26.62%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-001		0.012	0.042	0.016	0.016	0.016					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-5805-6583		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed cadmium				23.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-3.64	1.89	0.007	7	CDF	0.9958	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.0003641		0.0003641		1		13.2	0.0083	Significant Effect		
Error	0.0001928		2.754E-05		7						
Total	0.0005569				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				11.3	46.2	0.0747	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.944	0.701	0.6290	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-001		4	0.015	0.0118	0.0182		0.012	0.016	0.001	13.33%	46.04%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-001		0.012	Outlier	0.016	0.016	0.016					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-7264-5174		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed cadmium				28.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-1.05	1.86	0.008	8	CDF	0.8369	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.69	2.29	0.7027		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000484		0.0000484		1	1.09	0.3262	Non-Significant Effect			
Error	0.000354		4.425E-05		8						
Total	0.0004024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.04	23.2	0.9678		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.969	0.741	0.8790		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-002		5	0.0234	0.0152	0.0316		0.016	0.034	0.00294	28.12%	15.83%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-002		0.034	0.023	0.016	0.021	0.023					

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Report Date: 10 Nov-17 12:29 (p 13 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-5402-5177		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed cadmium				28.76%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.698	1.86	0.008	8	CDF	0.7475	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.84	2.29	0.4318	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000225		0.0000225		1	0.487	0.5050	Non-Significant Effect		
Error		0.0003696		0.0000462		8					
Total		0.0003921				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.04	23.2	0.9675	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.894	0.741	0.1896	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-003		5	0.0248	0.0163	0.0333		0.013	0.03	0.00307	27.70%	10.79%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-003		0.03	0.013	0.029	0.027	0.025					

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Report Date: 10 Nov-17 12:29 (p 14 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-4498-6793		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed cadmium			58.46%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	1.95	1.86	0.016	8	CDF	0.0438	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.06	2.29	0.1820		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0007225		0.0007225		1	3.78	0.0876	Non-Significant Effect			
Error	0.0015276		0.000191		8						
Total	0.0022501				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7.45	23.2	0.0774		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.934	0.741	0.4878		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-004		5	0.0448	0.022	0.0676		0.018	0.069	0.00821	40.96%	-61.15%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-004		0.046	0.041	0.018	0.069	0.05					

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Report Date: 10 Nov-17 12:29 (p 15 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-5439-8566		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed cadmium				44.66%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	1.41	1.86	0.012	8	CDF	0.0984	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.29	2.29	0.0497		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002209		0.0002209		1	1.98	0.1968	Non-Significant Effect			
Error	0.0008916		0.0001115		8						
Total	0.0011125				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.93	23.2	0.2134		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.856	0.741	0.0686		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-005		5	0.0372	0.0206	0.0538		0.028	0.06	0.00596	35.83%	-33.81%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-005		0.038	0.028	0.029	0.031	0.06					

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Report Date: 10 Nov-17 12:29 (p 16 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-8508-1911		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 passed cadmium			26.87%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.938	1.89	0.007	7	CDF	0.1896	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	3.042E-05		3.042E-05		1		0.881	0.3793	Non-Significant Effect		
Error	0.0002418		3.454E-05		7						
Total	0.0002722				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.22	46.2	0.5377	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.95	0.701	0.6939	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-005		4	0.0315	0.0243	0.0387		0.028	0.038	0.00225	14.32%	-13.31%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-005		0.038	0.028	0.029	0.031	Outlier					

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Report Date: 10 Nov-17 12:29 (p 17 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-4636-9482		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed cadmium			40.36%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	5.77	1.86	0.011	8	CDF	2.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.82	2.29	0.4594		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0030276		0.0030276		1	33.3	4.2E-04	Significant Effect			
Error	0.000728		0.000091		8						
Total	0.0037556				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.03	23.2	0.3088		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.956	0.741	0.7431		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-006		5	0.0626	0.0481	0.0771		0.05	0.079	0.00523	18.68%	-125.18%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-006		0.07	0.056	0.05	0.079	0.058					

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Report Date: 10 Nov-17 12:29 (p 18 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-3439-0780			Endpoint: Cadmium				CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)								
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed cadmium			53.34%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.21	1.86	0.015	8	CDF	0.0292	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.99	2.29	0.2494	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0007744		0.0007744		1	4.87	0.0584	Non-Significant Effect			
Error	0.001272		0.000159		8						
Total	0.0020464				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.04	23.2	0.1097	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.967	0.741	0.8582	Normal Distribution				
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
59517-007		5	0.0454	0.0249	0.0659		0.026	0.069	0.00739	36.38%	-63.31%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
59517-007		0.054	0.069	0.038	0.04	0.026					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 19 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-8338-2574		Endpoint: Cadmium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed cadmium			28.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.42	1.89	0.008	7	CDF	0.0994	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	7.867E-05		7.867E-05		1		2.01	0.1989	Non-Significant Effect		
Error	0.0002736		3.908E-05		7						
Total	0.0003522				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.46	46.2	0.7863	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.913	0.701	0.3397	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0278	0.0195	0.0361		0.019	0.035	0.00301	24.18%	0.00%
29517-008		4	0.0338	0.0249	0.0426		0.026	0.039	0.00278	16.47%	-21.40%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.023	0.029	0.033	0.035	0.019					
29517-008		0.034	Outlier	0.026	0.039	0.036					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 20 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-9206-1868		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed chromium				57.59%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.3	1.86	0.141	8	CDF	0.8854	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.99	2.29	0.2451		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0244036		0.0244036		1	1.7	0.2291	Non-Significant Effect			
Error	0.115143		0.0143928		8						
Total	0.139546				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.33	23.2	0.2707		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.924	0.741	0.3906		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-001		5	0.146	0.045	0.247		0.067	0.255	0.0365	55.76%	40.33%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-001		0.067	0.255	0.208	0.116	0.085					

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Report Date: 10 Nov-17 12:29 (p 21 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-9766-5574		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed chromium				61.35%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.205	1.86	0.15	8	CDF	0.5788	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.87	2.29	0.3940	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.0422	0.8424	Non-Significant Effect			
Error	0.130689		0.0163362		8						
Total	0.131378				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.1	23.2	0.4896	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.907	0.741	0.2641	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-002		5	0.228	0.101	0.356		0.131	0.401	0.0459	44.94%	6.78%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-002		0.218	0.178	0.131	0.214	0.401					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 22 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-5638-9323		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed chromium				80.78%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.173	1.86	0.198	8	CDF	0.5665	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2	2.29	0.2336		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0008464		0.0008464		1	0.0299	0.8670	Non-Significant Effect			
Error	0.226535		0.0283169		8						
Total	0.227382				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.56	23.2	0.6779		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.85	0.741	0.0577		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-003		5	0.227	-0.00401	0.457		0.084	0.544	0.0831	81.96%	7.51%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-003		0.115	0.084	0.16	0.544	0.23					

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Report Date: 10 Nov-17 12:29 (p 23 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-8335-4885		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed chromium			84.87%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.53	1.86	0.208	8	CDF	0.0826	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.71	2.29	0.6603	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0729316		0.0729316		1	2.33	0.1652	Non-Significant Effect			
Error	0.250079		0.0312598		8						
Total	0.32301				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.82	23.2	0.5748	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.964	0.741	0.8276	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-004		5	0.416	0.166	0.665		0.168	0.701	0.0899	48.33%	-69.71%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-004		0.701	0.487	0.168	0.424	0.299					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 24 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-5196-6544		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed chromium			56.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.242	1.86	0.138	8	CDF	0.4075	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.03	2.29	0.2072	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.00081	0.00081		1	0.0585	0.8150	Non-Significant Effect			
Error		0.110752	0.013844		8						
Total		0.111562			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.99	23.2	0.2088	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.924	0.741	0.3884	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-005		5	0.263	0.171	0.355		0.207	0.39	0.0333	28.32%	-7.35%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-005		0.268	0.222	0.228	0.207	0.39					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 25 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-2459-8135		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed chromium			72.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.95	1.86	0.177	8	CDF	5.6E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4556		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55131		0.55131		1	24.5	0.0011	Significant Effect			
Error	0.180251		0.0225314		8						
Total	0.731562				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.04	23.2	0.9739		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.852	0.741	0.0607		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-006		5	0.715	0.527	0.903		0.606	0.973	0.0677	21.19%	-191.67%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-006		0.973	0.614	0.72	0.66	0.606					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 26 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-5664-9504		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed chromium			88.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.12	1.86	0.218	8	CDF	0.0332	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.69	2.29	0.6952		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.154505		0.154505		1	4.52	0.0663	Non-Significant Effect			
Error	0.273757		0.0342196		8						
Total	0.428262				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.09	23.2	0.4925		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.951	0.741	0.6800		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
59517-007		5	0.494	0.226	0.761		0.254	0.789	0.0962	43.59%	-101.47%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
59517-007		0.789	0.461	0.254	0.622	0.342					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 27 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-2534-3836		Endpoint: Chromium					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed chromium			73.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.98	1.86	0.18	8	CDF	0.0088	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.208802		0.208802		1	8.9	0.0175	Significant Effect			
Error	0.187682		0.0234602		8						
Total	0.396484				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.12	23.2	0.9156		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5859		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.245	0.0603	0.43		0.094	0.47	0.0665	60.73%	0.00%
29517-008		5	0.534	0.339	0.729		0.33	0.743	0.0704	29.48%	-117.96%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.165	0.47	0.182	0.314	0.094					
29517-008		0.743	0.618	0.452	0.33	0.527					

CETIS Analytical Report

Report Date: 10 Nov-17 12:29 (p 28 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-1480-6470		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed copper			33.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.72	1.86	0.633	8	CDF	0.9385	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5823		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.860836		0.860836		1	2.97	0.1230	Non-Significant Effect			
Error	2.31756		0.289695		8						
Total	3.1784				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.69	23.2	0.6221		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5179		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-001		5	1.28	0.532	2.03		0.699	2.17	0.27	47.11%	31.41%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-001		0.699	2.17	1.62	0.907	1.01					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-5337-8561		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed copper			31.84%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.648	1.86	0.595	8	CDF	0.7326	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.66	2.29	0.7770		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.107537		0.107537		1	0.421	0.5349	Non-Significant Effect			
Error	2.04587		0.255733		8						
Total	2.1534				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.38	23.2	0.7635		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.968	0.741	0.8722		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-002		5	1.66	0.985	2.34		0.993	2.45	0.243	32.78%	11.10%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-002		1.35	1.72	0.993	1.79	2.45					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-2532-1009		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed copper			33.20%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-1.17	1.86	0.62	8	CDF	0.8621	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.85	2.29	0.4121	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.38025		0.38025		1	1.37	0.2759	Non-Significant Effect			
Error	2.22436		0.278045		8						
Total	2.60461				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.59	23.2	0.6661	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.953	0.741	0.7092	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-003		5	1.48	0.753	2.2		0.92	2.4	0.261	39.51%	20.88%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-003		1.39	0.92	1.06	2.4	1.62					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-0927-2506		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed copper			44.79%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.32	1.86	0.837	8	CDF	0.1117	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.06	2.29	0.1793	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.88209		0.88209		1	1.74	0.2233	Non-Significant Effect			
Error	4.04956		0.506195		8						
Total	4.93165				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.71	23.2	0.2324	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.942	0.741	0.5771	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-004		5	2.46	1.35	3.57		1.08	3.36	0.399	36.27%	-31.80%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-004		3.13	2.44	1.08	3.36	2.3					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-5786-7257		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed copper			186.38%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	23	n/a	0	8	Exact	0.2103	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.66	2.29	7.3E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		10.0601		10.0601		1	1.15	0.3152	Non-Significant Effect		
Error		70.105		8.76313		8					
Total		80.1651				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			80.5	23.2	9.0E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.696	0.741	7.9E-04	Non-Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-005		5	3.87	-1.29	9.04		1.72	11.3	1.86	107.40%	-107.39%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-005		11.3	1.76	1.72	2.25	2.34					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-0037-4622		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed copper				27.85%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.544	1.89	0.52	7	CDF	0.3015	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0496672		0.0496672		1	0.296	0.6031	Non-Significant Effect			
Error	1.17315		0.167594		7						
Total	1.22282				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.06	46.2	0.5784	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.941	0.701	0.5973	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-005		4	2.02	1.5	2.53		1.72	2.34	0.161	16.01%	-8.00%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-005		Outlier	1.76	1.72	2.25	2.34					

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Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-6006-3237		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed copper			26.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.29	1.86	0.486	8	CDF	0.0013	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.61	2.29	0.8818		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.14721		3.14721		1	18.4	0.0027	Significant Effect			
Error	1.36848		0.17106		8						
Total	4.51569				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.69	23.2	0.6226		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.94	0.741	0.5514		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-006		5	2.99	2.55	3.43		2.57	3.42	0.159	11.92%	-60.06%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-006		3.42	2.57	3.27	2.96	2.73					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-1422-5304		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed copper				40.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	1.86	1.86	0.751	8	CDF	0.0501	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.63	2.29	0.8317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.40625		1.40625		1	3.45	0.1003	Non-Significant Effect			
Error	3.25996		0.407495		8						
Total	4.66621				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.79	23.2	0.3443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.964	0.741	0.8354	Normal Distribution				
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
59517-007		5	2.62	1.66	3.58		1.71	3.6	0.346	29.59%	-40.15%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
59517-007		3.22	2.38	1.71	2.18	3.6					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-7436-3360		Endpoint: Copper					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed copper				25.59%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.6	1.86	0.478	8	CDF	0.0158	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8151		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.11556		1.11556		1	6.75	0.0317	Significant Effect			
Error	1.3216		0.1652		8						
Total	2.43716				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.86	23.2	0.5609		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3567		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.87	1.29	2.44		1.24	2.38	0.207	24.83%	0.00%
29517-008		5	2.54	2.11	2.96		2.22	3.11	0.152	13.39%	-35.76%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	2.27	1.7	1.75	2.38	1.24					
29517-008		2.38	3.11	2.22	2.52	2.45					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-8620-7595		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed lead				37.69%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-2.21	1.86	0.131	8	CDF	0.9708	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.55	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0605284		0.0605284		1	4.87	0.0584	Non-Significant Effect		
Error		0.0994972		0.0124371		8					
Total		0.160026				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.64	23.2	0.6416	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.942	0.741	0.5743	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-001		5	0.192	0.072	0.313		0.095	0.339	0.0434	50.41%	44.71%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-001		0.095	0.339	0.231	0.174	0.123					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-0190-2342		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed lead			56.49%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.45	1.86	0.197	8	CDF	0.6678	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.21	2.29	0.0816	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0056644		0.0056644		1	0.203	0.6645	Non-Significant Effect		
Error		0.223551		0.0279439		8					
Total		0.229216				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.61	23.2	0.3748	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.884	0.741	0.1440	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-002		5	0.3	0.0508	0.55		0.154	0.649	0.0899	66.93%	13.68%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-002		0.29	0.194	0.154	0.215	0.649					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-0051-3876		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed lead			43.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.777	1.86	0.151	8	CDF	0.7702	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.89	2.29	0.3628		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0099856		0.0099856		1	0.603	0.4596	Non-Significant Effect			
Error	0.132391		0.0165488		8						
Total	0.142376				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.14	23.2	0.9022		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.921	0.741	0.3656		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-003		5	0.285	0.12	0.45		0.171	0.514	0.0594	46.62%	18.16%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-003		0.243	0.171	0.231	0.514	0.265					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-2982-6827		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed lead			53.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	2.41	1.86	0.186	8	CDF	0.0212	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2	2.29	0.2341		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.145685		0.145685		1	5.82	0.0424	Significant Effect			
Error	0.200311		0.0250389		8						
Total	0.345996				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.24	23.2	0.4546		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.956	0.741	0.7393		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-004		5	0.589	0.358	0.82		0.291	0.79	0.0832	31.56%	-69.37%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-004		0.79	0.643	0.291	0.663	0.56					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-1060-0664		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed lead				40.22%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.539	1.86	0.14	8	CDF	0.3021	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.45	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0041209		0.0041209		1	0.291	0.6043	Non-Significant Effect			
Error	0.113291		0.0141614		8						
Total	0.117412				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.2	23.2	0.8619	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.925	0.741	0.3973	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-005		5	0.389	0.248	0.529		0.281	0.541	0.0507	29.18%	-11.67%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-005		0.469	0.292	0.281	0.36	0.541					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-9890-7569		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed lead			46.88%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	5.43	1.86	0.163	8	CDF	3.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7931		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.567392		0.567392		1	29.5	6.2E-04	Significant Effect			
Error	0.153949		0.0192436		8						
Total	0.721342				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.49	23.2	0.7095		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4814		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-006		5	0.824	0.636	1.01		0.685	1.04	0.0679	18.40%	-136.90%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-006		1.04	0.685	0.911	0.795	0.691					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-5033-9783		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed lead			65.91%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.86	1.86	0.229	8	CDF	0.0106	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5766	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between		0.310817	0.310817	1	8.17	0.0212	Significant Effect				
Error		0.304237	0.0380297	8							
Total		0.615054		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.92	23.2	0.2145	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.976	0.741	0.9391	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
59517-007		5	0.701	0.395	1.01		0.378	0.964	0.11	35.13%	-101.32%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
59517-007		0.964	0.725	0.378	0.902	0.534					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3608-2340		Endpoint: Lead					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed lead			48.99%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	3.66	1.86	0.17	8	CDF	0.0032	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.52	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.281233		0.281233		1	13.4	0.0064	Significant Effect			
Error	0.168117		0.0210146		8						
Total	0.44935				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.72	23.2	0.6133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.894	0.741	0.1896		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.348	0.194	0.502		0.185	0.494	0.0556	35.74%	0.00%
29517-008		5	0.683	0.481	0.886		0.546	0.891	0.0729	23.85%	-96.38%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.29	0.494	0.323	0.448	0.185					
29517-008		0.828	0.891	0.564	0.588	0.546					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-1685-1691		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed mercury			17.89%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	27.5	n/a	2	8	Exact	0.7381	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.16	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0		0		1	0	1.0000	Non-Significant Effect		
Error		0.0000024		0.0000003		8					
Total		0.0000024				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1	23.2	1.0000	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.64	0.741	1.7E-04	Non-Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-001		5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-001		0.003	0.004	0.004	0.003	0.004					

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Report Date: 10 Nov-17 12:30 (p 46 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-6464-5453		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed mercury				24.23%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.71	1.86	0.0009	8	CDF	0.0632	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.29	2.29	0.0506		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000016		0.0000016		1	2.91	0.1265	Non-Significant Effect			
Error	0.0000044		5.5E-07		8						
Total	0.000006				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.67	23.2	0.3651		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.787	0.741	0.0101		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-002		5	0.0044	0.00329	0.00551		0.004	0.006	0.0004	20.33%	-22.22%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-002		0.004	0.004	0.004	0.004	0.006					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5806-3695		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed mercury				16.33%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6884		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000001		0.0000001		1	0.4	0.5447	Non-Significant Effect			
Error	0.0000002		2.5E-07		8						
Total	0.0000021				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.5	23.2	0.7040		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.759	0.741	0.0045		Non-Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-003		5	0.0038	0.00324	0.00436		0.003	0.004	0.0002	11.77%	-5.56%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-003		0.003	0.004	0.004	0.004	0.004					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-9866-4620		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed mercury				26.52%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.298	1.89	0.001	7	CDF	0.3873	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	5E-08		5E-08		1		0.0886	0.7746	Non-Significant Effect		
Error	3.95E-06		5.643E-07		7						
Total	0.000004				8						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.06	24.3	0.3088	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.86	0.701	0.0969	Normal Distribution				
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-004		4	0.00375	0.00223	0.00527		0.003	0.005	0.000479	25.53%	-4.17%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-004		Outlier	0.005	0.003	0.003	0.004					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-0822-3772		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed mercury				16.33%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6884		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000001		0.0000001		1	0.4	0.5447	Non-Significant Effect			
Error	0.0000002		2.5E-07		8						
Total	0.0000021				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.5	23.2	0.7040		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.759	0.741	0.0045		Non-Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-005		5	0.0038	0.00324	0.00436		0.003	0.004	0.0002	11.77%	-5.56%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-005		0.004	0.003	0.004	0.004	0.004					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-2183-1904		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed mercury			16.33%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6884		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000001		0.0000001		1	0.4	0.5447	Non-Significant Effect			
Error	0.0000002		2.5E-07		8						
Total	0.0000021				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.5	23.2	0.7040		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.759	0.741	0.0045		Non-Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-006		5	0.0038	0.00324	0.00436		0.003	0.004	0.0002	11.77%	-5.56%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-006		0.004	0.004	0.004	0.004	0.003					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-4946-2817		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed mercury				23.10%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.447	1.86	0.0008	8	CDF	0.3333	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4974		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1E-07		1E-07		1	0.2	0.6666	Non-Significant Effect			
Error	0.000004		0.0000005		8						
Total	0.0000041				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.33	23.2	0.4320		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.883	0.741	0.1411		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
59517-007		5	0.0038	0.00276	0.00484		0.003	0.005	0.000374	22.02%	-5.56%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
59517-007		0.004	0.004	0.003	0.003	0.005					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-9217-6955		Endpoint: Mercury					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed mercury				26.34%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.784	1.86	0.0009	8	CDF	0.2277	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.32	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000004		0.0000004		1	0.615	0.4554	Non-Significant Effect			
Error	0.0000052		6.5E-07		8						
Total	0.0000056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.33	23.2	0.2704		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.896	0.741	0.1980		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0036	0.00292	0.00428		0.003	0.004	0.000245	15.21%	0.00%
29517-008		5	0.004	0.00276	0.00524		0.003	0.005	0.000447	25.00%	-11.11%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.004	0.004	0.003	0.003	0.004					
29517-008		0.004	0.005	0.003	0.003	0.005					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-3959-6603		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed nickel			29.87%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-2.57	1.86	0.116	8	CDF	0.9835	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.86	2.29	0.4100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0638401		0.0638401		1	6.61	0.0331	Significant Effect		
Error		0.0772888		0.0096611		8					
Total		0.141129				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.49	23.2	0.3985	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7494	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-001		5	0.227	0.135	0.32		0.141	0.326	0.0333	32.75%	41.29%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-001		0.141	0.326	0.273	0.222	0.174					

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Report Date: 10 Nov-17 12:30 (p 54 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-4134-9087		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed nickel				31.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-1.68	1.86	0.121	8	CDF	0.9346	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5327	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0298116		0.0298116		1	2.84	0.1307	Non-Significant Effect		
Error		0.0841128		0.0105141		8					
Total		0.113924				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.9	23.2	0.5483	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.939	0.741	0.5405	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-002		5	0.278	0.172	0.383		0.154	0.366	0.0381	30.64%	28.22%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-002		0.347	0.245	0.154	0.277	0.366					

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Report Date: 10 Nov-17 12:30 (p 55 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-1112-9782		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed nickel			33.34%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-1.89	1.86	0.129	8	CDF	0.9519	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.66	2.29	0.7606	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0427716		0.0427716		1	3.55	0.0961	Non-Significant Effect			
Error	0.0962648		0.0120331		8						
Total	0.139036				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.34	23.2	0.7831	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.971	0.741	0.9005	Normal Distribution				
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-003		5	0.256	0.13	0.382		0.159	0.408	0.0453	39.58%	33.80%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-003		0.168	0.159	0.261	0.408	0.285					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-0683-3610		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed nickel			32.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.51	1.86	0.127	8	CDF	0.6882	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.69	2.29	0.6997	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0030276		0.0030276		1	0.26	0.6237	Non-Significant Effect			
Error	0.0930468		0.0116308		8						
Total	0.0960744				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.45	23.2	0.7253	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5816	Normal Distribution				
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-004		5	0.352	0.231	0.473		0.238	0.48	0.0435	27.64%	8.99%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-004		0.48	0.422	0.238	0.301	0.32					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-6196-3972		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed nickel				27.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-0.932	1.86	0.108	8	CDF	0.8108	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.99	2.29	0.2419		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00729		0.00729		1	0.87	0.3784	Non-Significant Effect			
Error	0.067072		0.008384		8						
Total	0.074362				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.62	23.2	0.1673		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.967	0.741	0.8576		Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-005		5	0.333	0.265	0.401		0.274	0.417	0.0244	16.40%	13.95%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-005		0.32	0.351	0.274	0.303	0.417					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9345-5623		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed nickel			29.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.342	1.86	0.113	8	CDF	0.3707	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.9	2.29	0.3545	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0010816		0.0010816		1	0.117	0.7413	Non-Significant Effect		
Error		0.0740708		0.0092589		8					
Total		0.0751524				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.91	23.2	0.3251	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.963	0.741	0.8215	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-006		5	0.408	0.322	0.493		0.326	0.502	0.0308	16.87%	-5.37%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-006		0.502	0.326	0.395	0.448	0.368					

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Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-8445-8041		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed nickel			30.27%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.356	1.86	0.117	8	CDF	0.6343	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.83	2.29	0.4471	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0012544		0.0012544		1	0.126	0.7314	Non-Significant Effect		
Error		0.0793872		0.0099234		8					
Total		0.0806416				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.27	23.2	0.4457	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.95	0.741	0.6674	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
59517-007		5	0.365	0.268	0.461		0.269	0.457	0.0348	21.35%	5.79%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
59517-007		0.431	0.457	0.269	0.324	0.342					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-3251-6430		Endpoint: Nickel					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed nickel			31.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.0697	1.86	0.123	8	CDF	0.4731	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5903		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000529		0.0000529		1	0.00485	0.9462	Non-Significant Effect			
Error	0.0872232		0.0109029		8						
Total	0.0872761				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.72	23.2	0.6127		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.962	0.741	0.8066		Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.387	0.241	0.533		0.215	0.508	0.0525	30.34%	0.00%
29517-008		5	0.392	0.28	0.503		0.288	0.523	0.0401	22.87%	-1.19%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.459	0.508	0.324	0.429	0.215					
29517-008		0.404	0.411	0.288	0.332	0.523					

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Report Date: 10 Nov-17 12:30 (p 61 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-0146-5800		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed zinc			31.86%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.46	1.86	3.57	8	CDF	0.9088	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.17	2.29	0.1026	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	19.6		19.6		1	2.13	0.1824	Non-Significant Effect			
Error	73.5626		9.19532		8						
Total	93.1626				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.46	23.2	0.1769	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.879	0.741	0.1283	Normal Distribution				
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-001		5	8.39	3.58	13.2		5.64	14.6	1.73	46.18%	25.02%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-001		5.64	14.6	9.8	6.24	5.68					

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 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-2242-8017		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed zinc				20.02%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-3.12	1.86	2.24	8	CDF	0.9929	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.51	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	35.4192		35.4192		1	9.75	0.0142	Significant Effect			
Error	29.0508		3.63135		8						
Total	64.47				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.15	23.2	0.8924		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.945	0.741	0.6055		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-002		5	7.43	4.98	9.88		4.72	9.93	0.882	26.56%	33.63%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-002		8.64	6.9	4.72	6.95	9.93					

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Report Date: 10 Nov-17 12:30 (p 63 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-1228-1719		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed zinc			24.79%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-1.99	1.86	2.77	8	CDF	0.9591	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	22.0226		22.0226		1	3.96	0.0819	Non-Significant Effect			
Error	44.5218		5.56523		8						
Total	66.5444				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.3	23.2	0.4391	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.943	0.741	0.5891	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-003		5	8.22	4.77	11.7		4.85	11.5	1.25	33.87%	26.52%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-003		6.5	4.85	7.67	11.5	10.6					

CETIS Analytical Report

Report Date: 10 Nov-17 12:30 (p 64 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-8440-3977		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed zinc			31.60%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.545	1.86	3.54	8	CDF	0.3004	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.01	2.29	0.2279	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.68324		2.68324		1	0.297	0.6008	Non-Significant Effect		
Error		72.3329		9.04162		8					
Total		75.0162				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.37	23.2	0.1825	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.971	0.741	0.8992	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-004		5	12.2	7.47	17		6.54	16.8	1.72	31.37%	-9.26%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-004		12.1	11.3	6.54	14.4	16.8					

CETIS Analytical Report

Report Date: 10 Nov-17 12:30 (p 65 of 68)
Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-5027-7404		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed zinc			17.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-0.218	1.86	1.92	8	CDF	0.5834	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.63	2.29	0.8270	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.12544		0.12544		1	0.0473	0.8333	Non-Significant Effect		
Error		21.2122		2.65152		8					
Total		21.3376				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.74	23.2	0.6033	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.935	0.741	0.4971	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-005		5	11	9.24	12.7		9.46	12.9	0.622	12.68%	2.00%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-005		9.88	9.46	10.9	11.7	12.9					

CETIS Analytical Report

Report Date: 10 Nov-17 12:30 (p 66 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-4194-8712		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:21		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed zinc			16.25%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.58	1.86	1.82	8	CDF	0.0761	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.72	2.29	0.6421	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.99076		5.99076		1	2.5	0.1522	Non-Significant Effect			
Error	19.1333		2.39166		8						
Total	25.124				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.39	23.2	0.4205	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6359	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-006		5	12.7	11.3	14.2		11.3	14.2	0.532	9.33%	-13.83%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-006		13.7	11.3	12.1	12.4	14.2					

CETIS Analytical Report

Report Date: 10 Nov-17 12:30 (p 67 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-5054-9598		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed zinc			22.50%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.447	1.86	2.52	8	CDF	0.6668	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5380	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.91809		0.91809		1	0.2	0.6664	Non-Significant Effect		
Error		36.6852		4.58565		8					
Total		37.6033				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.72	23.2	0.6118	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7553	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
59517-007		5	10.6	7.6	13.6		7	13.3	1.08	22.75%	5.41%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
59517-007		11.5	11.6	7	13.3	9.53					

CETIS Analytical Report

Report Date: 10 Nov-17 12:30 (p 68 of 68)
 Test Code: 29524Mn-Met | 06-3864-7022

Bioaccumulation Evaluation - Metals - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-1405-7297		Endpoint: Zinc					CETIS Version: CETISv1.9.3				
Analyzed: 10 Nov-17 12:22		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed zinc				21.43%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.014	1.86	2.4	8	CDF	0.5054	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.31	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0008100		0.0008100		1	0.000195	0.9892	Non-Significant Effect			
Error	33.2708		4.15885		8						
Total	33.2716				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.47	23.2	0.7190		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.899	0.741	0.2127		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	8.91	13.5		9.3	13.7	0.821	16.40%	0.00%
29517-008		5	11.2	8.41	13.9		8.72	13.7	0.995	19.91%	0.16%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.66	12.3	11	13.7	9.3					
29517-008		8.95	12	8.72	13.7	12.5					

28 day *Nereis virens*
Sediment Bioaccumulation Evaluation

Body Burden Data and Statistical Analysis Reports

Trace Metals

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	1.94		2.32		2.39		1.60		2.04	
Cadmium	0.037 J		0.048		0.039		0.023 J		0.022 J	
Chromium	0.053 J		0.048 J		0.040 J		0.081 J		0.063 J	
Copper	0.89		1.02		1.13		0.96		1.11	
Lead	0.160		0.205		0.122		0.072		0.076	
Mercury	0.007 J		0.006 J		0.008 J		0.014		0.014	
Nickel	0.094 J		0.063 J		0.125		0.171		0.102	
Zinc	6.01		6.64		6.14		5.40		6.10	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 1									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.17		2.28		2.02		2.01		2.36	
Cadmium	0.038 J		0.043		0.056		0.024 J		0.033 J	
Chromium	0.049 J		0.051 J		0.079 J		0.051 J		0.044 J	
Copper	0.68		0.91		0.80		0.99		0.88	
Lead	0.087		0.140		0.140		0.059		0.066	
Mercury	0.008 J		0.008 J		0.007 J		0.019		0.011 J	
Nickel	0.088 J		0.084 J		0.093 J		0.073 J		0.086 J	
Zinc	5.79		6.40		5.78		7.30		6.88	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	1.95		2.32		2.46		2.20		2.56	
Cadmium	0.042		0.046		0.055		0.036 J		0.043	
Chromium	0.066 J		0.050 J		0.040 J		0.038 J		0.035 U	
Copper	1.05		1.00		0.92		0.93		1.53	
Lead	0.083		0.136		0.146		0.119		0.205	
Mercury	0.016		0.006 J		0.006 J		0.006 J		0.007 J	
Nickel	0.132		0.082 J		0.051 J		0.065 J		0.073 J	
Zinc	6.41		6.80		7.08		5.87		7.22	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 3									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.14		2.07		2.29		2.40		1.81	
Cadmium	0.034 J		0.030 J		0.038 J		0.031 J		0.044	
Chromium	0.042 J		0.051 J		0.035 U		0.040 J		0.066 J	
Copper	0.97		0.91		1.20		0.64		1.10	
Lead	0.115		0.057		0.134		0.091		0.115	
Mercury	0.010 J		0.015		0.007 J		0.006 J		0.018	
Nickel	0.095 J		0.088 J		0.079 J		0.106		0.097 J	
Zinc	7.09		7.06		6.32		6.54		6.17	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	1.99		1.86		2.15		1.90		2.43	
Cadmium	0.042		0.028 J		0.053		0.028 J		0.049	
Chromium	0.040 J		0.058 J		0.035 U		0.068 J		0.035 J	
Copper	1.13		1.26		1.26		1.45		1.08	
Lead	0.126		0.087		0.165		0.094		0.150	
Mercury	0.013		0.014		0.008 J		0.015		0.008 J	
Nickel	0.063 J		0.085 J		0.063 J		0.106		0.086 J	
Zinc	6.37		6.66		6.22		7.26		7.08	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.14		2.37		2.18		2.25		2.21	
Cadmium	0.038 J		0.041		0.039		0.041		0.033 J	
Chromium	0.036 U		0.044 J		0.035 U		0.035 U		0.055 J	
Copper	0.68		0.80		1.20		0.88		0.91	
Lead	0.146		0.113		0.173		0.121		0.139	
Mercury	0.006 J		0.007 J		0.006 J		0.008 J		0.008 J	
Nickel	0.062 J		0.075 J		0.086 J		0.069 J		0.067 J	
Zinc	5.65		6.40		7.09		5.74		6.36	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 6									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.12		1.95		2.04		2.19		1.89	
Cadmium	0.036 J		0.036 J		0.035 J		0.035 J		0.037 J	
Chromium	0.128 J		0.042 J		0.078 J		0.053 J		0.098 J	
Copper	0.89		1.04		1.08		1.02		1.22	
Lead	0.132		0.064		0.086		0.067		0.128	
Mercury	0.004 J		0.013		0.011 J		0.012 J		0.013	
Nickel	0.087 J		0.087 J		0.128		0.151		0.124	
Zinc	6.23		7.05		6.77		6.59		7.16	

* = Qualifiers

U Analyte not detected; below Method Detection Limit

J Analyte estimated; detection below Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.02		2.09		2.03		2.02		2.53	
Cadmium	0.038 J		0.035 J		0.033 J		0.042		0.040	
Chromium	0.048 J		0.035 U		0.036 U		0.038 J		0.054 J	
Copper	0.94		0.77		0.90		1.10		0.99	
Lead	0.104		0.125		0.087		0.120		0.145	
Mercury	0.016		0.008 J		0.012 J		0.013		0.010 J	
Nickel	0.102		0.076 J		0.104		0.109		0.135	
Zinc	7.72		17.00		6.38		6.86		7.28	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Arsenic	2.40		2.58		2.13		2.22		2.26	
Cadmium	0.041		0.049		0.037 J		0.039 J		0.037 J	
Chromium	0.041 J		0.038 J		0.036 U		0.036 U		0.042 J	
Copper	0.85		0.82		0.83		0.78		0.84	
Lead	0.185		0.121		0.117		0.159		0.122	
Mercury	0.008 J		0.008 J		0.006 J		0.007 J		0.008 J	
Nickel	0.140		0.131		0.101		0.082 J		0.078 J	
Zinc	7.16		7.18		6.84		5.87		5.58	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:09 (p 1 of 2)
Test Code/ID: 08-4659-7587/29525Nv-Met

Bioaccumulation Evaluation - Metals - Nereis virens											EnviroSystems, Inc.
Start Date: 31 Aug-17		Species: Nereis virens		Sample Code: 29525-000							
End Date: 28 Sep-17		Protocol: US ACE NED RIM (2004)		Sample Source: New Haven Harbor FNP -2017							
Sample Date: 31 Aug-17		Material: Laboratory Control Sediment		Sample Station: Laboratory Control - 29525							
Sample	Rep	Pos	Body Burden	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
29517-009	1	37		1.94	0.037	0.053	0.889	0.16	0.007	0.094	6.01
29517-009	2	20		2.32	0.048	0.048	1.02	0.205	0.006	0.063	6.64
29517-009	3	13		2.39	0.039	0.04	1.13	0.122	0.008	0.125	6.14
29517-009	4	21		1.6	0.023	0.081	0.96	0.072	0.014	0.171	5.4
29517-009	5	24		2.04	0.022	0.063	1.11	0.076	0.014	0.102	6.1
29517-001	1	38		2.17	0.038	0.049	0.682	0.087	0.008	0.088	5.79
29517-001	2	31		2.28	0.043	0.051	0.909	0.14	0.008	0.084	6.4
29517-001	3	30		2.02	0.056	0.079	0.798	0.14	0.007	0.093	5.78
29517-001	4	45		2.01	0.024	0.051	0.987	0.059	0.019	0.073	7.3
29517-001	5	41		2.36	0.033	0.044	0.884	0.066	0.011	0.086	6.88
29517-002	1	28		1.95	0.042	0.066	1.05	0.083	0.016	0.132	6.41
29517-002	2	22		2.32	0.046	0.05	1	0.136	0.006	0.082	6.8
29517-002	3	32		2.46	0.055	0.04	0.917	0.146	0.006	0.051	7.08
29517-002	4	7		2.2	0.036	0.038	0.93	0.119	0.006	0.065	5.87
29517-002	5	2		2.56	0.043	0.035	1.53	0.205	0.007	0.073	7.22
29517-003	1	1		2.14	0.034	0.042	0.967	0.115	0.01	0.095	7.09
29517-003	2	35		2.07	0.03	0.051	0.912	0.057	0.015	0.088	7.06
29517-003	3	19		2.29	0.038	0.035	1.2	0.134	0.007	0.079	6.32
29517-003	4	36		2.4	0.031	0.04	0.641	0.091	0.006	0.106	6.54
29517-003	5	5		1.81	0.044	0.066	1.1	0.115	0.018	0.097	6.17
29517-004	1	11		1.99	0.042	0.04	1.13	0.126	0.013	0.063	6.37
29517-004	2	23		1.86	0.028	0.058	1.26	0.087	0.014	0.085	6.66
29517-004	3	3		2.15	0.053	0.035	1.26	0.165	0.008	0.063	6.22
29517-004	4	33		1.9	0.028	0.068	1.45	0.094	0.015	0.106	7.26
29517-004	5	8		2.43	0.049	0.035	1.08	0.15	0.008	0.086	7.08
29517-005	1	18		2.14	0.038	0.036	0.677	0.146	0.006	0.062	5.65
29517-005	2	27		2.37	0.041	0.044	0.801	0.113	0.007	0.075	6.4
29517-005	3	39		2.18	0.039	0.035	1.2	0.173	0.006	0.086	7.09
29517-005	4	34		2.25	0.041	0.035	0.876	0.121	0.008	0.069	5.74
29517-005	5	26		2.21	0.033	0.055	0.906	0.139	0.008	0.067	6.36
29517-006	1	44		2.12	0.036	0.128	0.888	0.132	0.004	0.087	6.23
29517-006	2	6		1.95	0.036	0.042	1.04	0.064	0.013	0.087	7.05

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:09 (p 2 of 2)
 Test Code/ID: 08-4659-7587/29525Nv-Met

Sample	Rep	Pos	Body Burden	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
29517-006	3	43		2.04	0.035	0.078	1.08	0.086	0.011	0.128	6.77
29517-006	4	15		2.19	0.035	0.053	1.02	0.067	0.012	0.151	6.59
29517-006	5	12		1.89	0.037	0.098	1.22	0.128	0.013	0.124	7.16
59517-007	1	42		2.02	0.038	0.048	0.936	0.104	0.016	0.102	7.72
59517-007	2	14		2.09	0.035	0.035	0.773	0.125	0.008	0.076	17
59517-007	3	16		2.03	0.033	0.036	0.902	0.087	0.012	0.104	6.38
59517-007	4	29		2.02	0.042	0.038	1.1	0.12	0.013	0.109	6.86
59517-007	5	25		2.53	0.04	0.054	0.99	0.145	0.01	0.135	7.28
29517-008	1	40		2.4	0.041	0.041	0.851	0.185	0.008	0.14	7.16
29517-008	2	17		2.58	0.049	0.038	0.818	0.121	0.008	0.131	7.18
29517-008	3	9		2.13	0.037	0.036	0.827	0.117	0.006	0.101	6.84
29517-008	4	4		2.22	0.039	0.036	0.78	0.159	0.007	0.082	5.87
29517-008	5	10		2.26	0.037	0.042	0.842	0.122	0.008	0.078	5.58

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 1 of 6)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens						EnviroSystems, Inc.
Batch ID:	05-2235-9305	Test Type:	Bioaccumulation - Metals		Analyst:	Nancy Roka
Start Date:	31 Aug-17	Protocol:	US ACE NED RIM (2004)		Diluent:	Not Applicable
Ending Date:	28 Sep-17	Species:	Nereis virens		Brine:	Not Applicable
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH		Age:	
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
14-3473-7858	Arsenic	Equal Variance t Two-Sample Test	0.2530	29517-001	passed arsenic	
13-3837-1527	Arsenic	Equal Variance t Two-Sample Test	0.1065	29517-002	passed arsenic	
07-0757-8613	Arsenic	Equal Variance t Two-Sample Test	0.3213	29517-003	passed arsenic	
02-3377-8417	Arsenic	Equal Variance t Two-Sample Test	0.4824	29517-004	passed arsenic	
15-3228-4658	Arsenic	Equal Variance t Two-Sample Test	0.1383	29517-005	passed arsenic	
03-8978-9763	Arsenic	Equal Variance t Two-Sample Test	0.5507	29517-006	passed arsenic	
18-8343-9589	Arsenic	Equal Variance t Two-Sample Test	0.3280	59517-007	passed arsenic	
19-3601-1818	Arsenic	Equal Variance t Two-Sample Test	0.0739	29517-008	passed arsenic	
20-1126-4322	Cadmium	Equal Variance t Two-Sample Test	0.2560	29517-001	passed cadmium	
17-0787-3508	Cadmium	Equal Variance t Two-Sample Test	0.0542	29517-002	passed cadmium	
12-0530-5439	Cadmium	Equal Variance t Two-Sample Test	0.3911	29517-003	passed cadmium	
20-7911-8945	Cadmium	Equal Variance t Two-Sample Test	0.2071	29517-004	passed cadmium	
06-0841-4744	Cadmium	Equal Variance t Two-Sample Test	0.2005	29517-005	passed cadmium	
08-1856-7647	Cadmium	Unequal Variance t Two-Sample Test	0.3545	29517-006	passed cadmium	
11-2725-1457	Cadmium	Equal Variance t Two-Sample Test	0.2443	59517-007	passed cadmium	
16-0394-0333	Cadmium	Equal Variance t Two-Sample Test	0.1237	29517-008	passed cadmium	
17-4466-2530	Chromium	Equal Variance t Two-Sample Test	0.5897	29517-001	passed chromium	
19-5325-3546	Chromium	Equal Variance t Two-Sample Test	0.8747	29517-002	passed chromium	
10-2372-0166	Chromium	Equal Variance t Two-Sample Test	0.8569	29517-003	passed chromium	
18-6039-5970	Chromium	Equal Variance t Two-Sample Test	0.8281	29517-004	passed chromium	
19-5228-9713	Chromium	Equal Variance t Two-Sample Test	0.9588	29517-005	passed chromium	
19-2147-6407	Chromium	Equal Variance t Two-Sample Test	0.1088	29517-006	passed chromium	
20-0343-4048	Chromium	Equal Variance t Two-Sample Test	0.9493	59517-007	passed chromium	
18-6109-4320	Chromium	Unequal Variance t Two-Sample Test	0.9688	29517-008	passed chromium	
13-7770-5762	Copper	Equal Variance t Two-Sample Test	0.9804	29517-001	passed copper	
05-1904-0311	Copper	Equal Variance t Two-Sample Test	0.3087	29517-002	passed copper	
14-8134-4566	Copper	Equal Variance t Two-Sample Test	0.7798	29517-002	passed copper	

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 2 of 6)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
01-5645-7586	Copper	Equal Variance t Two-Sample Test	0.7008	29517-003 passed copper
07-1243-4232	Copper	Equal Variance t Two-Sample Test	0.0130	29517-004 failed copper
07-2591-3701	Copper	Equal Variance t Two-Sample Test	0.8898	29517-005 passed copper
08-0985-7420	Copper	Equal Variance t Two-Sample Test	0.3508	29517-006 passed copper
00-2191-2886	Copper	Equal Variance t Two-Sample Test	0.8609	59517-007 passed copper
12-0615-8558	Copper	Equal Variance t Two-Sample Test	0.9986	29517-008 passed copper
10-8058-4285	Lead	Equal Variance t Two-Sample Test	0.8096	29517-001 passed lead
19-8897-8515	Lead	Equal Variance t Two-Sample Test	0.3731	29517-002 passed lead
16-0752-5741	Lead	Equal Variance t Two-Sample Test	0.7928	29517-003 passed lead
18-6088-9979	Lead	Equal Variance t Two-Sample Test	0.5340	29517-004 passed lead
00-9709-4805	Lead	Equal Variance t Two-Sample Test	0.3442	29517-005 passed lead
19-9032-3186	Lead	Equal Variance t Two-Sample Test	0.8443	29517-006 passed lead
09-1924-5278	Lead	Equal Variance t Two-Sample Test	0.6494	59517-007 passed lead
07-0292-4525	Lead	Equal Variance t Two-Sample Test	0.3215	29517-008 passed lead
12-4019-0699	Mercury	Equal Variance t Two-Sample Test	0.3916	29517-001 passed mercury
07-9003-6964	Mercury	Equal Variance t Two-Sample Test	0.7206	29517-002 passed mercury
10-3832-7473	Mercury	Equal Variance t Two-Sample Test	0.3208	29517-003 passed mercury
21-3736-4915	Mercury	Equal Variance t Two-Sample Test	0.2284	29517-004 passed mercury
15-9620-4479	Mercury	Equal Variance t Two-Sample Test	0.9208	29517-005 passed mercury
05-5931-5524	Mercury	Equal Variance t Two-Sample Test	0.3752	29517-006 passed mercury
15-9073-4161	Mercury	Equal Variance t Two-Sample Test	0.1959	59517-007 passed mercury
11-8375-7480	Mercury	Equal Variance t Two-Sample Test	0.8917	29517-008 passed mercury
05-0728-5929	Nickel	Unequal Variance t Two-Sample Test	0.8874	29517-001 passed nickel
19-2274-6710	Nickel	Equal Variance t Two-Sample Test	0.8915	29517-002 passed nickel
03-1934-1023	Nickel	Equal Variance t Two-Sample Test	0.8199	29517-003 passed nickel
11-4888-2439	Nickel	Equal Variance t Two-Sample Test	0.9191	29517-004 passed nickel
10-7881-4784	Nickel	Equal Variance t Two-Sample Test	0.9668	29517-005 passed nickel
06-2299-2077	Nickel	Equal Variance t Two-Sample Test	0.4229	29517-006 passed nickel
06-5331-5990	Nickel	Equal Variance t Two-Sample Test	0.6089	59517-007 passed nickel
07-9157-6566	Nickel	Equal Variance t Two-Sample Test	0.5804	29517-008 passed nickel
06-2347-4571	Zinc	Equal Variance t Two-Sample Test	0.1651	29517-001 passed zinc
06-6406-1179	Zinc	Equal Variance t Two-Sample Test	0.0425	29517-002 failed zinc
01-9125-9301	Zinc	Equal Variance t Two-Sample Test	0.0337	29517-003 failed zinc
17-4229-7757	Zinc	Equal Variance t Two-Sample Test	0.0234	29517-004 failed zinc
15-0624-1674	Zinc	Equal Variance t Two-Sample Test	0.2888	29517-005 passed zinc
17-4188-4908	Zinc	Equal Variance t Two-Sample Test	0.0132	29517-006 failed zinc
07-5285-5694	Zinc	Equal Variance t Two-Sample Test	0.0104	59517-007 failed zinc
06-1460-6432	Zinc	Wilcoxon Rank Sum Two-Sample Test	0.0079	59517-007 failed zinc
03-8506-5515	Zinc	Equal Variance t Two-Sample Test	0.1320	29517-008 passed zinc

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 3 of 6)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens											EnviroSystems, Inc.
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	1.6	2.39	0.142	0.317	15.42%	0.00%
29517-001		5	2.17	1.98	2.36	2.01	2.36	0.0694	0.155	7.16%	-5.34%
29517-002		5	2.3	2	2.59	1.95	2.56	0.106	0.238	10.35%	-11.66%
29517-003		5	2.14	1.86	2.42	1.81	2.4	0.101	0.226	10.54%	-4.08%
29517-004		5	2.07	1.78	2.35	1.86	2.43	0.104	0.232	11.23%	-0.39%
29517-005		5	2.23	2.12	2.34	2.14	2.37	0.0394	0.088	3.95%	-8.36%
29517-006		5	2.04	1.89	2.19	1.89	2.19	0.0545	0.122	5.98%	0.97%
59517-007		5	2.14	1.86	2.41	2.02	2.53	0.0989	0.221	10.34%	-3.89%
29517-008		5	2.32	2.1	2.54	2.13	2.58	0.0786	0.176	7.59%	-12.63%
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.022	0.048	0.00497	0.0111	32.91%	0.00%
29517-001		5	0.0388	0.024	0.0536	0.024	0.056	0.00532	0.0119	30.68%	-14.79%
29517-002		5	0.0444	0.0358	0.053	0.036	0.055	0.00311	0.00695	15.65%	-31.36%
29517-003		5	0.0354	0.0283	0.0425	0.03	0.044	0.00256	0.00573	16.18%	-4.73%
29517-004		5	0.04	0.0255	0.0545	0.028	0.053	0.00521	0.0116	29.10%	-18.34%
29517-005		5	0.0384	0.0343	0.0425	0.033	0.041	0.00147	0.00329	8.56%	-13.61%
29517-006		5	0.0358	0.0348	0.0368	0.035	0.037	0.000374	0.000837	2.34%	-5.92%
59517-007		5	0.0376	0.0331	0.0421	0.033	0.042	0.00163	0.00365	9.70%	-11.24%
29517-008		5	0.0406	0.0344	0.0468	0.037	0.049	0.00223	0.00498	12.27%	-20.12%
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.04	0.081	0.00706	0.0158	27.71%	0.00%
29517-001		5	0.0548	0.0376	0.072	0.044	0.079	0.00618	0.0138	25.23%	3.86%
29517-002		5	0.0458	0.0301	0.0615	0.035	0.066	0.00564	0.0126	27.55%	19.65%
29517-003		5	0.0468	0.0317	0.0619	0.035	0.066	0.00545	0.0122	26.06%	17.89%
29517-004		5	0.0472	0.0286	0.0658	0.035	0.068	0.0067	0.015	31.76%	17.19%
29517-005		5	0.041	0.0302	0.0518	0.035	0.055	0.00389	0.00869	21.19%	28.07%
29517-006		5	0.0798	0.0368	0.123	0.042	0.128	0.0155	0.0347	43.43%	-40.00%
59517-007		5	0.0422	0.0318	0.0526	0.035	0.054	0.00375	0.00838	19.85%	25.96%
29517-008		5	0.0386	0.0351	0.0421	0.036	0.042	0.00125	0.00279	7.24%	32.28%
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	0.889	1.13	0.0452	0.101	9.90%	0.00%
29517-001		5	0.852	0.707	0.997	0.682	0.987	0.0521	0.117	13.68%	16.62%
29517-002		5	1.09	0.77	1.4	0.917	1.53	0.114	0.254	23.43%	-6.22%
29517-003		5	0.964	0.7	1.23	0.641	1.2	0.0952	0.213	22.08%	5.66%
29517-004		5	1.24	1.06	1.41	1.08	1.45	0.0642	0.144	11.62%	-20.96%
29517-005		5	0.892	0.652	1.13	0.677	1.2	0.0866	0.194	21.70%	12.70%
29517-006		5	1.05	0.901	1.2	0.888	1.22	0.0534	0.119	11.38%	-2.72%
59517-007		5	0.94	0.791	1.09	0.773	1.1	0.0536	0.12	12.75%	7.99%
29517-008		5	0.824	0.789	0.858	0.78	0.851	0.0123	0.0275	3.34%	19.40%

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 4 of 6)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens											EnviroSystems, Inc.
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.072	0.205	0.0253	0.0566	44.58%	0.00%
29517-001		5	0.0984	0.0495	0.147	0.059	0.14	0.0176	0.0393	39.99%	22.52%
29517-002		5	0.138	0.0825	0.193	0.083	0.205	0.0199	0.0446	32.34%	-8.50%
29517-003		5	0.102	0.0656	0.139	0.057	0.134	0.0132	0.0296	28.92%	19.37%
29517-004		5	0.124	0.0822	0.167	0.087	0.165	0.0152	0.034	27.35%	2.05%
29517-005		5	0.138	0.109	0.168	0.113	0.173	0.0105	0.0235	16.96%	-8.98%
29517-006		5	0.0954	0.0548	0.136	0.064	0.132	0.0146	0.0327	34.30%	24.88%
59517-007		5	0.116	0.089	0.143	0.087	0.145	0.00981	0.0219	18.87%	8.50%
29517-008		5	0.141	0.104	0.178	0.117	0.185	0.0134	0.03	21.30%	-10.87%
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.006	0.014	0.00174	0.0039	39.78%	0.00%
29517-001		5	0.0106	0.00448	0.0167	0.007	0.019	0.0022	0.00493	46.50%	-8.16%
29517-002		5	0.0082	0.00276	0.0136	0.006	0.016	0.00196	0.00438	53.44%	16.33%
29517-003		5	0.0112	0.00478	0.0176	0.006	0.018	0.00231	0.00517	46.14%	-14.29%
29517-004		5	0.0116	0.00743	0.0158	0.008	0.015	0.0015	0.00336	28.98%	-18.37%
29517-005		5	0.007	0.00576	0.00824	0.006	0.008	0.000447	0.001	14.29%	28.57%
29517-006		5	0.0106	0.0059	0.0153	0.004	0.013	0.00169	0.00378	35.67%	-8.16%
59517-007		5	0.0118	0.00803	0.0156	0.008	0.016	0.00136	0.00303	25.70%	-20.41%
29517-008		5	0.0074	0.00629	0.00851	0.006	0.008	0.0004	0.000894	12.09%	24.49%
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.063	0.171	0.018	0.0402	36.23%	0.00%
29517-001		5	0.0848	0.0756	0.094	0.073	0.093	0.00331	0.0074	8.72%	23.60%
29517-002		5	0.0806	0.0422	0.119	0.051	0.132	0.0138	0.0309	38.35%	27.39%
29517-003		5	0.093	0.0804	0.106	0.079	0.106	0.00453	0.0101	10.89%	16.22%
29517-004		5	0.0806	0.0581	0.103	0.063	0.106	0.0081	0.0181	22.48%	27.39%
29517-005		5	0.0718	0.0604	0.0832	0.062	0.086	0.00412	0.0092	12.82%	35.32%
29517-006		5	0.115	0.0808	0.15	0.087	0.151	0.0125	0.0279	24.18%	-3.96%
59517-007		5	0.105	0.0791	0.131	0.076	0.135	0.0094	0.021	19.98%	5.23%
29517-008		5	0.106	0.0715	0.141	0.078	0.14	0.0126	0.0281	26.44%	4.14%
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	5.4	6.64	0.198	0.442	7.30%	0.00%
29517-001		5	6.43	5.6	7.26	5.78	7.3	0.299	0.669	10.41%	-6.14%
29517-002		5	6.68	6	7.35	5.87	7.22	0.244	0.547	8.19%	-10.20%
29517-003		5	6.64	6.11	7.16	6.17	7.09	0.189	0.422	6.36%	-9.54%
29517-004		5	6.72	6.16	7.27	6.22	7.26	0.2	0.446	6.65%	-10.89%
29517-005		5	6.25	5.52	6.97	5.65	7.09	0.261	0.583	9.33%	-3.14%
29517-006		5	6.76	6.3	7.22	6.23	7.16	0.166	0.372	5.51%	-11.59%
59517-007		5	9.05	3.49	14.6	6.38	17	2	4.47	49.44%	-49.36%
29517-008		5	6.53	5.59	7.46	5.58	7.18	0.336	0.751	11.50%	-7.73%

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 5 of 6)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens						EnviroSystems, Inc.
Arsenic Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	1.94	2.32	2.39	1.6	2.04
29517-001		2.17	2.28	2.02	2.01	2.36
29517-002		1.95	2.32	2.46	2.2	2.56
29517-003		2.14	2.07	2.29	2.4	1.81
29517-004		1.99	1.86	2.15	1.9	2.43
29517-005		2.14	2.37	2.18	2.25	2.21
29517-006		2.12	1.95	2.04	2.19	1.89
59517-007		2.02	2.09	2.03	2.02	2.53
29517-008		2.4	2.58	2.13	2.22	2.26
Cadmium Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.037	0.048	0.039	0.023	0.022
29517-001		0.038	0.043	0.056	0.024	0.033
29517-002		0.042	0.046	0.055	0.036	0.043
29517-003		0.034	0.03	0.038	0.031	0.044
29517-004		0.042	0.028	0.053	0.028	0.049
29517-005		0.038	0.041	0.039	0.041	0.033
29517-006		0.036	0.036	0.035	0.035	0.037
59517-007		0.038	0.035	0.033	0.042	0.04
29517-008		0.041	0.049	0.037	0.039	0.037
Chromium Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.053	0.048	0.04	0.081	0.063
29517-001		0.049	0.051	0.079	0.051	0.044
29517-002		0.066	0.05	0.04	0.038	0.035
29517-003		0.042	0.051	0.035	0.04	0.066
29517-004		0.04	0.058	0.035	0.068	0.035
29517-005		0.036	0.044	0.035	0.035	0.055
29517-006		0.128	0.042	0.078	0.053	0.098
59517-007		0.048	0.035	0.036	0.038	0.054
29517-008		0.041	0.038	0.036	0.036	0.042
Copper Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.889	1.02	1.13	0.96	1.11
29517-001		0.682	0.909	0.798	0.987	0.884
29517-002		1.05	1	0.917	0.93	1.53
29517-003		0.967	0.912	1.2	0.641	1.1
29517-004		1.13	1.26	1.26	1.45	1.08
29517-005		0.677	0.801	1.2	0.876	0.906
29517-006		0.888	1.04	1.08	1.02	1.22
59517-007		0.936	0.773	0.902	1.1	0.99
29517-008		0.851	0.818	0.827	0.78	0.842

CETIS Summary Report

Report Date: 29 Nov-17 10:21 (p 6 of 6)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens						EnviroSystems, Inc.
Lead Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.16	0.205	0.122	0.072	0.076
29517-001		0.087	0.14	0.14	0.059	0.066
29517-002		0.083	0.136	0.146	0.119	0.205
29517-003		0.115	0.057	0.134	0.091	0.115
29517-004		0.126	0.087	0.165	0.094	0.15
29517-005		0.146	0.113	0.173	0.121	0.139
29517-006		0.132	0.064	0.086	0.067	0.128
59517-007		0.104	0.125	0.087	0.12	0.145
29517-008		0.185	0.121	0.117	0.159	0.122
Mercury Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.007	0.006	0.008	0.014	0.014
29517-001		0.008	0.008	0.007	0.019	0.011
29517-002		0.016	0.006	0.006	0.006	0.007
29517-003		0.01	0.015	0.007	0.006	0.018
29517-004		0.013	0.014	0.008	0.015	0.008
29517-005		0.006	0.007	0.006	0.008	0.008
29517-006		0.004	0.013	0.011	0.012	0.013
59517-007		0.016	0.008	0.012	0.013	0.01
29517-008		0.008	0.008	0.006	0.007	0.008
Nickel Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.094	0.063	0.125	0.171	0.102
29517-001		0.088	0.084	0.093	0.073	0.086
29517-002		0.132	0.082	0.051	0.065	0.073
29517-003		0.095	0.088	0.079	0.106	0.097
29517-004		0.063	0.085	0.063	0.106	0.086
29517-005		0.062	0.075	0.086	0.069	0.067
29517-006		0.087	0.087	0.128	0.151	0.124
59517-007		0.102	0.076	0.104	0.109	0.135
29517-008		0.14	0.131	0.101	0.082	0.078
Zinc Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	6.01	6.64	6.14	5.4	6.1
29517-001		5.79	6.4	5.78	7.3	6.88
29517-002		6.41	6.8	7.08	5.87	7.22
29517-003		7.09	7.06	6.32	6.54	6.17
29517-004		6.37	6.66	6.22	7.26	7.08
29517-005		5.65	6.4	7.09	5.74	6.36
29517-006		6.23	7.05	6.77	6.59	7.16
59517-007		7.72	17	6.38	6.86	7.28
29517-008		7.16	7.18	6.84	5.87	5.58

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 1 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 14-3473-7858		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed arsenic				14.27%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	0.696	1.86	0.294	8	CDF	0.2530	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.2939	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.03025		0.03025		1	0.485	0.5060	Non-Significant Effect		
Error		0.49916		0.062395		8					
Total		0.52941				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.18	23.2	0.1945	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.963	0.741	0.8196	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-001		5	2.17	1.98	2.36	2.17	2.01	2.36	0.0694	7.16%	-5.34%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-001		2.17	2.28	2.02	2.01	2.36					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 2 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 13-3837-1527		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed arsenic			16.02%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.35	1.86	0.33	8	CDF	0.1065	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6180		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.144		0.144		1	1.83	0.2129	Non-Significant Effect			
Error	0.62896		0.07862		8						
Total	0.77296				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.78	23.2	0.5895		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.94	0.741	0.5524		Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-002		5	2.3	2	2.59	2.32	1.95	2.56	0.106	10.35%	-11.66%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-002		1.95	2.32	2.46	2.2	2.56					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 3 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-0757-8613		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed arsenic			15.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.482	1.86	0.324	8	CDF	0.3213	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.76	2.29	0.5597	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.01764		0.01764		1	0.233	0.6425	Non-Significant Effect		
Error		0.60676		0.075845		8					
Total		0.6244				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.98	23.2	0.5257	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.944	0.741	0.6003	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-003		5	2.14	1.86	2.42	2.14	1.81	2.4	0.101	10.54%	-4.08%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-003		2.14	2.07	2.29	2.4	1.81					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 4 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 02-3377-8417		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed arsenic			15.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.0455	1.86	0.327	8	CDF	0.4824	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5896		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001600		0.0001600		1	0.00207	0.9648	Non-Significant Effect			
Error	0.6182		0.077275		8						
Total	0.61836				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.87	23.2	0.5589		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.953	0.741	0.7009		Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-004		5	2.07	1.78	2.35	1.99	1.86	2.43	0.104	11.23%	-0.39%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-004		1.99	1.86	2.15	1.9	2.43					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 5 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 15-3228-4658		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed arsenic			13.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	1.17	1.86	0.274	8	CDF	0.1383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.09	2.29	0.1589	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.07396		0.07396		1	1.36	0.2765	Non-Significant Effect		
Error		0.43388		0.054235		8					
Total		0.50784				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			13	23.2	0.0292	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4772	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-005		5	2.23	2.12	2.34	2.21	2.14	2.37	0.0394	3.95%	-8.36%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-005		2.14	2.37	2.18	2.25	2.21					

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 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 03-8978-9763		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed arsenic				13.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.132	1.86	0.283	8	CDF	0.5507	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.02	2.29	0.2142	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.001		0.001		1	0.0173	0.8986	Non-Significant Effect		
Error		0.46236		0.057795		8					
Total		0.46336				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.77	23.2	0.0908	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.964	0.741	0.8317	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-006		5	2.04	1.89	2.19	2.04	1.89	2.19	0.0545	5.98%	0.97%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-006		2.12	1.95	2.04	2.19	1.89					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 18-8343-9589		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed arsenic				15.63%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.463	1.86	0.322	8	CDF	0.3280	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5378	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.016		0.016		1	0.214	0.6560	Non-Significant Effect			
Error	0.59836		0.074795		8						
Total	0.61436				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.06	23.2	0.5009	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.895	0.741	0.1933	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
59517-007		5	2.14	1.86	2.41	2.03	2.02	2.53	0.0989	10.34%	-3.89%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
59517-007		2.02	2.09	2.03	2.02	2.53					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-3601-1818		Endpoint: Arsenic					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed arsenic				14.66%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.6	1.86	0.302	8	CDF	0.0739	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.89	2.29	0.3578	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.169		0.169		1	2.57	0.1477	Non-Significant Effect		
Error		0.52656		0.06582		8					
Total		0.69556				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.26	23.2	0.2792	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.948	0.741	0.6419	Normal Distribution			
Arsenic Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.06	1.66	2.45	2.04	1.6	2.39	0.142	15.42%	0.00%
29517-008		5	2.32	2.1	2.54	2.26	2.13	2.58	0.0786	7.59%	-12.63%
Arsenic Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.94	2.32	2.39	1.6	2.04					
29517-008		2.4	2.58	2.13	2.22	2.26					

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 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 20-1126-4322		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed cadmium				40.08%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	0.686	1.86	0.014	8	CDF	0.2560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.58	2.29	0.9481		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000625		0.0000625		1	0.471	0.5119	Non-Significant Effect			
Error	0.0010616		0.0001327		8						
Total	0.0011241				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.15	23.2	0.8984		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6492		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-001		5	0.0388	0.024	0.0536	0.038	0.024	0.056	0.00532	30.68%	-14.79%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-001		0.038	0.043	0.056	0.024	0.033					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 17-0787-3508		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed cadmium			32.27%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.81	1.86	0.011	8	CDF	0.0542	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.62	2.29	0.8493		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002809		0.0002809		1	3.27	0.1083	Non-Significant Effect			
Error	0.000688		0.000086		8						
Total	0.0009689				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.56	23.2	0.3846		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.958	0.741	0.7685		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-002		5	0.0444	0.0358	0.053	0.043	0.036	0.055	0.00311	15.65%	-31.36%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-002		0.042	0.046	0.055	0.036	0.043					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 12-0530-5439		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed cadmium				30.78%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.286	1.86	0.010	8	CDF	0.3911	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6770		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000064		0.0000064		1	0.0818	0.7822	Non-Significant Effect			
Error	0.000626		7.825E-05		8						
Total	0.0006324				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.77	23.2	0.2267		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.972	0.741	0.9067		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-003		5	0.0354	0.0283	0.0425	0.034	0.03	0.044	0.00256	16.18%	-4.73%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-003		0.034	0.03	0.038	0.031	0.044					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 20-7911-8945		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed cadmium				39.61%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.861	1.86	0.013	8	CDF	0.2071	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.32	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000961		0.0000961		1	0.742	0.4142	Non-Significant Effect		
Error		0.0010368		0.0001296		8					
Total		0.0011329				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.1	23.2	0.9318	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.852	0.741	0.0619	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-004		5	0.04	0.0255	0.0545	0.042	0.028	0.053	0.00521	29.10%	-18.34%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-004		0.042	0.028	0.053	0.028	0.049					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-0841-4744		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed cadmium			28.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.887	1.86	0.01	8	CDF	0.2005	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.84	2.29	0.4390		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000529		0.0000529		1	0.787	0.4010	Non-Significant Effect			
Error	0.000538		6.725E-05		8						
Total	0.0005909				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			11.5	23.2	0.0366		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.939	0.741	0.5381		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-005		5	0.0384	0.0343	0.0425	0.039	0.033	0.041	0.00147	8.56%	-13.61%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-005		0.038	0.041	0.039	0.041	0.033					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 14 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 08-1856-7647		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed cadmium				31.46%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.401	2.13	0.011	4	CDF	0.3545	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3366	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1E-05		1E-05		1	0.161	0.6989	Non-Significant Effect		
Error		0.0004976		0.0000622		8					
Total		0.0005076				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			177	23.2	1.9E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.91	0.741	0.2831	Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-006		5	0.0358	0.0348	0.0368	0.036	0.035	0.037	0.000374	2.34%	-5.92%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-006		0.036	0.036	0.035	0.035	0.037					

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Report Date: 29 Nov-17 10:19 (p 15 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 11-2725-1457		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed cadmium			28.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.726	1.86	0.01	8	CDF	0.2443	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.82	2.29	0.4652		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000361		0.0000361		1	0.527	0.4886	Non-Significant Effect			
Error	0.000548		0.0000685		8						
Total	0.0005841				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			9.3	23.2	0.0529		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7522		Normal Distribution			
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
59517-007		5	0.0376	0.0331	0.0421	0.038	0.033	0.042	0.00163	9.70%	-11.24%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
59517-007		0.038	0.035	0.033	0.042	0.04					

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Report Date: 29 Nov-17 10:19 (p 16 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 16-0394-0333		Endpoint: Cadmium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed cadmium			29.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.25	1.86	0.010	8	CDF	0.1237	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5889	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001156		0.0001156		1	1.56	0.2474	Non-Significant Effect			
Error	0.000594		7.425E-05		8						
Total	0.0007096				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.99	23.2	0.1487	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.972	0.741	0.9127	Normal Distribution				
Cadmium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0338	0.02	0.0476	0.037	0.022	0.048	0.00497	32.91%	0.00%
29517-008		5	0.0406	0.0344	0.0468	0.039	0.037	0.049	0.00223	12.27%	-20.12%
Cadmium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.037	0.048	0.039	0.023	0.022					
29517-008		0.041	0.049	0.037	0.039	0.037					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 17 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 17-4466-2530		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed chromium				30.63%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.234	1.86	0.018	8	CDF	0.5897	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.73	2.29	0.6244	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000121		0.0000121		1	0.0549	0.8206	Non-Significant Effect		
Error		0.0017628		0.0002204		8					
Total		0.0017749				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.3	23.2	0.8027	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.843	0.741	0.0482	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-001		5	0.0548	0.0376	0.072	0.051	0.044	0.079	0.00618	25.23%	3.86%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-001		0.049	0.051	0.079	0.051	0.044					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 18 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-5325-3546		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed chromium				29.50%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-1.24	1.86	0.017	8	CDF	0.8747	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003136		0.0003136		1	1.53	0.2505	Non-Significant Effect		
Error		0.0016348		0.0002044		8					
Total		0.0019484				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.57	23.2	0.6740	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.906	0.741	0.2534	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-002		5	0.0458	0.0301	0.0615	0.04	0.035	0.066	0.00564	27.55%	19.65%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-002		0.066	0.05	0.04	0.038	0.035					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 19 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 10-2372-0166		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed chromium			29.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-1.14	1.86	0.017	8	CDF	0.8569	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4906		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	1.31	0.2861	Non-Significant Effect			
Error	0.0015928		0.0001991		8						
Total	0.0018529				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.68	23.2	0.6284		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.922	0.741	0.3725		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-003		5	0.0468	0.0317	0.0619	0.042	0.035	0.066	0.00545	26.06%	17.89%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-003		0.042	0.051	0.035	0.04	0.066					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 20 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 18-6039-5970		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed chromium			31.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-1.01	1.86	0.018	8	CDF	0.8281	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.65	2.29	0.7826	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002401		0.0002401		1	1.01	0.3437	Non-Significant Effect		
Error		0.0018968		0.0002371		8					
Total		0.0021369				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9216	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.898	0.741	0.2099	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-004		5	0.0472	0.0286	0.0658	0.04	0.035	0.068	0.0067	31.76%	17.19%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-004		0.04	0.058	0.035	0.068	0.035					

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Report Date: 29 Nov-17 10:19 (p 21 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-5228-9713		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed chromium			26.30%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-1.98	1.86	0.015	8	CDF	0.9588	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2	2.29	0.2373	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00064		0.00064		1	3.94	0.0825	Non-Significant Effect		
Error		0.0013		0.0001625		8					
Total		0.00194				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.3	23.2	0.2737	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.932	0.741	0.4667	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-005		5	0.041	0.0302	0.0518	0.036	0.035	0.055	0.00389	21.19%	28.07%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-005		0.036	0.044	0.035	0.035	0.055					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 22 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-2147-6407		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed chromium			55.57%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.34	1.86	0.032	8	CDF	0.1088	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.9	2.29	0.3515	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0012996		0.0012996		1	1.79	0.2175	Non-Significant Effect		
Error		0.0058028		0.0007254		8					
Total		0.0071024				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.81	23.2	0.1571	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.983	0.741	0.9792	Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-006		5	0.0798	0.0368	0.123	0.078	0.042	0.128	0.0155	43.43%	-40.00%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-006		0.128	0.042	0.078	0.053	0.098					

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Report Date: 29 Nov-17 10:19 (p 23 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 20-0343-4048		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed chromium				26.09%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-1.85	1.86	0.015	8	CDF	0.9493	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.01	2.29	0.2211		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005476		0.0005476		1	3.43	0.1013	Non-Significant Effect			
Error	0.0012788		0.0001599		8						
Total	0.0018264				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.55	23.2	0.2469		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.94	0.741	0.5560		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
59517-007		5	0.0422	0.0318	0.0526	0.038	0.035	0.054	0.00375	19.85%	25.96%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
59517-007		0.048	0.035	0.036	0.038	0.054					

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Report Date: 29 Nov-17 10:19 (p 24 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 18-6109-4320		Endpoint: Chromium					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed chromium				26.83%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-2.56	2.13	0.015	4	CDF	0.9688	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.24	2.29	0.0671		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0008464		0.0008464		1	6.58	0.0334	Significant Effect			
Error	0.0010292		0.0001287		8						
Total	0.0018756				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			32	23.2	0.0054		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3403		Normal Distribution			
Chromium Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.057	0.0374	0.0766	0.053	0.04	0.081	0.00706	27.71%	0.00%
29517-008		5	0.0386	0.0351	0.0421	0.038	0.036	0.042	0.00125	7.24%	32.28%
Chromium Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.053	0.048	0.04	0.081	0.063					
29517-008		0.041	0.038	0.036	0.036	0.042					

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Report Date: 29 Nov-17 10:19 (p 25 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 13-7770-5762		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed copper			12.56%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-2.46	1.86	0.128	8	CDF	0.9804	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7843		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0720801		0.0720801		1	6.05	0.0393	Significant Effect			
Error	0.0952588		0.0119074		8						
Total	0.167339				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.33	23.2	0.7909		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7117		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-001		5	0.852	0.707	0.997	0.884	0.682	0.987	0.0521	13.68%	16.62%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-001		0.682	0.909	0.798	0.987	0.884					

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Report Date: 29 Nov-17 10:19 (p 26 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 14-8134-4566		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed copper			10.78%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.818	1.89	0.11	7	CDF	0.7798	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0050245		0.0050245		1	0.669	0.4404	Non-Significant Effect			
Error	0.0525815		0.0075117		7						
Total	0.057606				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.64	46.2	0.4514	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.95	0.701	0.6922	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-002		4	0.974	0.875	1.07	0.965	0.917	1.05	0.0311	6.39%	4.65%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-002		1.05	1	0.917	0.93	Outlier					

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Report Date: 29 Nov-17 10:19 (p 27 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 05-1904-0311		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed copper				22.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.52	1.86	0.228	8	CDF	0.3087	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.44	2.29	0.0157		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0101124		0.0101124		1	0.27	0.6174	Non-Significant Effect			
Error	0.299668		0.0374585		8						
Total	0.30978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.32	23.2	0.1018		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.825	0.741	0.0288		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-002		5	1.09	0.77	1.4	1	0.917	1.53	0.114	23.43%	-6.22%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-002		1.05	1	0.917	0.93	1.53					

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Report Date: 29 Nov-17 10:19 (p 28 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 01-5645-7586		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed copper				19.18%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.548	1.86	0.196	8	CDF	0.7008	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.06	2.29	0.1831		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0083521		0.0083521		1	0.301	0.5984	Non-Significant Effect			
Error	0.222179		0.0277724		8						
Total	0.230531				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.43	23.2	0.1787		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.965	0.741	0.8386		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-003		5	0.964	0.7	1.23	0.967	0.641	1.2	0.0952	22.08%	5.66%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-003		0.967	0.912	1.2	0.641	1.1					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 29 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-1243-4232		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed copper			14.30%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	2.73	1.86	0.146	8	CDF	0.0130	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.83	2.29	0.4537	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.114704		0.114704		1	7.43	0.0260	Significant Effect		
Error		0.123465		0.0154331		8					
Total		0.238169				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.02	23.2	0.5140	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.963	0.741	0.8157	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-004		5	1.24	1.06	1.41	1.26	1.08	1.45	0.0642	11.62%	-20.96%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-004		1.13	1.26	1.26	1.45	1.08					

CETIS Analytical Report

Report Date: 29 Nov-17 10:19 (p 30 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-2591-3701		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed copper				17.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-1.33	1.86	0.182	8	CDF	0.8898	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1374		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0421201		0.0421201		1	1.77	0.2205	Non-Significant Effect			
Error	0.190767		0.0238459		8						
Total	0.232887				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.66	23.2	0.2369		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.959	0.741	0.7693		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-005		5	0.892	0.652	1.13	0.876	0.677	1.2	0.0866	21.70%	12.70%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-005		0.677	0.801	1.2	0.876	0.906					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 31 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 08-0985-7420		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed copper			12.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.397	1.86	0.13	8	CDF	0.3508	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.63	2.29	0.8284		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0019321		0.0019321		1	0.158	0.7016	Non-Significant Effect			
Error	0.097988		0.0122485		8						
Total	0.0999201				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.39	23.2	0.7558		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.978	0.741	0.9543		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-006		5	1.05	0.901	1.2	1.04	0.888	1.22	0.0534	11.38%	-2.72%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-006		0.888	1.04	1.08	1.02	1.22					

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Report Date: 29 Nov-17 10:20 (p 32 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 00-2191-2886		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed copper				12.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-1.16	1.86	0.13	8	CDF	0.8609	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.6	2.29	0.9096		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0166464		0.0166464		1	1.35	0.2782	Non-Significant Effect			
Error	0.0983936		0.0122992		8						
Total	0.11504				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.4	23.2	0.7508		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.976	0.741	0.9425		Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
59517-007		5	0.94	0.791	1.09	0.936	0.773	1.1	0.0536	12.75%	7.99%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
59517-007		0.936	0.773	0.902	1.1	0.99					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 33 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 12-0615-8558		Endpoint: Copper					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed copper			8.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-4.23	1.86	0.087	8	CDF	0.9986	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.9	2.29	0.3495	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0982081		0.0982081		1	17.9	0.0029	Significant Effect		
Error		0.043978		0.0054973		8					
Total		0.142186				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			13.5	23.2	0.0272	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.965	0.741	0.8389	Normal Distribution			
Copper Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	1.02	0.896	1.15	1.02	0.889	1.13	0.0452	9.90%	0.00%
29517-008		5	0.824	0.789	0.858	0.827	0.78	0.851	0.0123	3.34%	19.40%
Copper Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.889	1.02	1.13	0.96	1.11					
29517-008		0.851	0.818	0.827	0.78	0.842					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 34 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 10-8058-4285		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed lead			45.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.927	1.86	0.057	8	CDF	0.8096	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.7	2.29	0.6888	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0020449		0.0020449		1	0.86	0.3808	Non-Significant Effect		
Error		0.0190172		0.0023772		8					
Total		0.0210621				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.07	23.2	0.4982	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.922	0.741	0.3740	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-001		5	0.0984	0.0495	0.147	0.087	0.059	0.14	0.0176	39.99%	22.52%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-001		0.087	0.14	0.14	0.059	0.066					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 35 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-8897-8515		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed lead			47.18%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.335	1.86	0.06	8	CDF	0.3731	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.62	2.29	0.8501	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.112	0.7461	Non-Significant Effect			
Error	0.0207668		0.0025959		8						
Total	0.0210584				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.61	23.2	0.6539	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.916	0.741	0.3213	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-002		5	0.138	0.0825	0.193	0.136	0.083	0.205	0.0199	32.34%	-8.50%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-002		0.083	0.136	0.146	0.119	0.205					

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Report Date: 29 Nov-17 10:20 (p 36 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 16-0752-5741		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed lead				41.84%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.861	1.86	0.053	8	CDF	0.7928	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4475		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0015129		0.0015129		1	0.741	0.4144	Non-Significant Effect			
Error	0.0163312		0.0020414		8						
Total	0.0178441				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.66	23.2	0.2371		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5863		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-003		5	0.102	0.0656	0.139	0.115	0.057	0.134	0.0132	28.92%	19.37%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-003		0.115	0.057	0.134	0.091	0.115					

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Report Date: 29 Nov-17 10:20 (p 37 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 18-6088-9979		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed lead			43.25%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.088	1.86	0.055	8	CDF	0.5340	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5466		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000169		0.0000169		1	0.00775	0.9320	Non-Significant Effect			
Error	0.0174532		0.0021817		8						
Total	0.0174701				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.77	23.2	0.3475		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.949	0.741	0.6517		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-004		5	0.124	0.0822	0.167	0.126	0.087	0.165	0.0152	27.35%	2.05%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-004		0.126	0.087	0.165	0.094	0.15					

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Report Date: 29 Nov-17 10:20 (p 38 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 00-9709-4805		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed lead				40.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.416	1.86	0.051	8	CDF	0.3442	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3377		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003249		0.0003249		1	0.173	0.6884	Non-Significant Effect			
Error	0.0150272		0.0018784		8						
Total	0.0153521				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.82	23.2	0.1164		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.963	0.741	0.8159		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-005		5	0.138	0.109	0.168	0.139	0.113	0.173	0.0105	16.96%	-8.98%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-005		0.146	0.113	0.173	0.121	0.139					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 39 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-9032-3186		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed lead			42.82%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-1.08	1.86	0.054	8	CDF	0.8443	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.79	2.29	0.5157	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0024964		0.0024964		1	1.17	0.3114	Non-Significant Effect		
Error		0.0171072		0.0021384		8					
Total		0.0196036				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.99	23.2	0.3133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5178	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-006		5	0.0954	0.0548	0.136	0.086	0.064	0.132	0.0146	34.30%	24.88%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-006		0.132	0.064	0.086	0.067	0.128					

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 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 09-1924-5278		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed lead			39.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.398	1.86	0.051	8	CDF	0.6494	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.93	2.29	0.3151	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.158	0.7012	Non-Significant Effect		
Error		0.0147468		0.0018434		8					
Total		0.0150384				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.67	23.2	0.0931	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.965	0.741	0.8425	Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
59517-007		5	0.116	0.089	0.143	0.12	0.087	0.145	0.00981	18.87%	8.50%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
59517-007		0.104	0.125	0.087	0.12	0.145					

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 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-0292-4525		Endpoint: Lead					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed lead			41.96%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.482	1.86	0.053	8	CDF	0.3215	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4553		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0004761		0.0004761		1	0.232	0.6430	Non-Significant Effect			
Error	0.0164208		0.0020526		8						
Total	0.0168969				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.57	23.2	0.2458		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6896		Normal Distribution			
Lead Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.127	0.0567	0.197	0.122	0.072	0.205	0.0253	44.58%	0.00%
29517-008		5	0.141	0.104	0.178	0.122	0.117	0.185	0.0134	21.30%	-10.87%
Lead Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.16	0.205	0.122	0.072	0.076					
29517-008		0.185	0.121	0.117	0.159	0.122					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 12-4019-0699		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed mercury			53.33%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	0.285	1.86	0.005	8	CDF	0.3916	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2	2.29	0.2295		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000016		0.0000016		1	0.081	0.7832	Non-Significant Effect			
Error	0.000158		1.975E-05		8						
Total	0.0001596				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.6	23.2	0.6605		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.832	0.741	0.0355		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-001		5	0.0106	0.00448	0.0167	0.008	0.007	0.019	0.0022	46.50%	-8.16%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-001		0.008	0.008	0.007	0.019	0.011					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-9003-6964		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed mercury				49.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.61	1.86	0.005	8	CDF	0.7206	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.99	2.29	0.2394		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000064		0.0000064		1	0.372	0.5588	Non-Significant Effect			
Error	0.0001376		0.0000172		8						
Total	0.000144				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.26	23.2	0.8264		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.796	0.741	0.0131		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-002		5	0.0082	0.00276	0.0136	0.006	0.006	0.016	0.00196	53.44%	16.33%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-002		0.016	0.006	0.006	0.006	0.007					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 10-3832-7473		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed mercury				54.93%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.484	1.86	0.005	8	CDF	0.3208	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.58	2.29	0.9682		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000049		0.0000049		1	0.234	0.6416	Non-Significant Effect			
Error	0.0001676		2.095E-05		8						
Total	0.0001725				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.76	23.2	0.5986		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.888	0.741	0.1596		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-003		5	0.0112	0.00478	0.0176	0.01	0.006	0.018	0.00231	46.14%	-14.29%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-003		0.01	0.015	0.007	0.006	0.018					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 21-3736-4915		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed mercury			43.68%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.782	1.86	0.004	8	CDF	0.2284	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.22	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000081		0.0000081		1	0.611	0.4568	Non-Significant Effect		
Error		0.000106		1.325E-05		8					
Total		0.0001141				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.35	23.2	0.7808	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.838	0.741	0.0414	Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-004		5	0.0116	0.00743	0.0158	0.013	0.008	0.015	0.0015	28.98%	-18.37%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-004		0.013	0.014	0.008	0.015	0.008					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 15-9620-4479		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed mercury			34.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-1.56	1.86	0.003	8	CDF	0.9208	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9954	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0000196	0.0000196		1	2.42	0.1584	Non-Significant Effect			
Error		0.0000648	0.0000081		8						
Total		0.0000844		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			15.2	23.2	0.0219	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.934	0.741	0.4851	Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-005		5	0.007	0.00576	0.00824	0.007	0.006	0.008	0.000447	14.29%	28.57%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-005		0.006	0.007	0.006	0.008	0.008					

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Report Date: 29 Nov-17 10:20 (p 47 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 05-5931-5524		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed mercury			46.09%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.329	1.86	0.005	8	CDF	0.3752	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.82	2.29	0.4606	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000016		0.0000016		1	0.108	0.7503	Non-Significant Effect			
Error	0.000118		1.475E-05		8						
Total	0.0001196				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.06	23.2	0.9543	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.934	0.741	0.4886	Normal Distribution				
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-006		5	0.0106	0.0059	0.0153	0.012	0.004	0.013	0.00169	35.67%	-8.16%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-006		0.004	0.013	0.011	0.012	0.013					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 15-9073-4161		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed mercury				41.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.905	1.86	0.004	8	CDF	0.1959	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.28	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00001		0.00001		1	0.82	0.3917	Non-Significant Effect		
Error		0.0000976		0.0000122		8					
Total		0.0001076				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.65	23.2	0.6386	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.862	0.741	0.0798	Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
59517-007		5	0.0118	0.00803	0.0156	0.012	0.008	0.016	0.00136	25.70%	-20.41%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
59517-007		0.016	0.008	0.012	0.013	0.01					

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Report Date: 29 Nov-17 10:20 (p 49 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 11-8375-7480		Endpoint: Mercury					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed mercury				33.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-1.34	1.86	0.003	8	CDF	0.8917	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9702		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000144		0.0000144		1	1.8	0.2165	Non-Significant Effect			
Error	0.000064		0.000008		8						
Total	0.0000784				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			19	23.2	0.0145		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.925	0.741	0.3972		Normal Distribution			
Mercury Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.0098	0.00496	0.0146	0.008	0.006	0.014	0.00174	39.78%	0.00%
29517-008		5	0.0074	0.00629	0.00851	0.008	0.006	0.008	0.0004	12.09%	24.49%
Mercury Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.007	0.006	0.008	0.014	0.014					
29517-008		0.008	0.008	0.006	0.007	0.008					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 50 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 05-0728-5929		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed nickel			35.12%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.43	2.13	0.039	4	CDF	0.8874	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.2	2.29	0.0870	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0017161		0.0017161		1	2.05	0.1899	Non-Significant Effect		
Error		0.0066888		0.0008361		8					
Total		0.0084049				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			29.6	23.2	0.0063	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.91	0.741	0.2820	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-001		5	0.0848	0.0756	0.094	0.086	0.073	0.093	0.00331	8.72%	23.60%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-001		0.088	0.084	0.093	0.073	0.086					

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Report Date: 29 Nov-17 10:20 (p 51 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 19-2274-6710		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed nickel				38.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-1.34	1.86	0.042	8	CDF	0.8915	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5412	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0023104	0.0023104		1	1.8	0.2170	Non-Significant Effect			
Error		0.0102912	0.0012864		8						
Total		0.0126016		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.69	23.2	0.6224	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.922	0.741	0.3719	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-002		5	0.0806	0.0422	0.119	0.073	0.051	0.132	0.0138	38.35%	27.39%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-002		0.132	0.082	0.051	0.065	0.073					

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Report Date: 29 Nov-17 10:20 (p 52 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 03-1934-1023		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed nickel			31.07%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.97	1.86	0.035	8	CDF	0.8199	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.17	2.29	0.1033	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00081		0.00081		1	0.942	0.3602	Non-Significant Effect		
Error		0.00688		0.00086		8					
Total		0.00769				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			15.8	23.2	0.0205	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.926	0.741	0.4110	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-003		5	0.093	0.0804	0.106	0.095	0.079	0.106	0.00453	10.89%	16.22%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-003		0.095	0.088	0.079	0.106	0.097					

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Report Date: 29 Nov-17 10:20 (p 53 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 11-4888-2439		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed nickel			33.05%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-1.54	1.86	0.037	8	CDF	0.9191	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.04	2.29	0.1964	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0023104		0.0023104		1	2.37	0.1619	Non-Significant Effect		
Error		0.0077832		0.0009729		8					
Total		0.0100936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.93	23.2	0.1516	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7155	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-004		5	0.0806	0.0581	0.103	0.085	0.063	0.106	0.0081	22.48%	27.39%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-004		0.063	0.085	0.063	0.106	0.086					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 54 of 66)
 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 10-7881-4784		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 passed nickel			30.91%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-2.12	1.86	0.034	8	CDF	0.9668	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.18	2.29	0.0971	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0038416		0.0038416		1	4.51	0.0664	Non-Significant Effect		
Error		0.0068088		0.0008511		8					
Total		0.0106504				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			19.1	23.2	0.0144	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.914	0.741	0.3126	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-005		5	0.0718	0.0604	0.0832	0.069	0.062	0.086	0.00412	12.82%	35.32%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-005		0.062	0.075	0.086	0.069	0.067					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 55 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-2299-2077		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed nickel			36.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.201	1.86	0.041	8	CDF	0.4229	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.84	2.29	0.4358	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000484		0.0000484		1	0.0404	0.8457	Non-Significant Effect		
Error		0.0095832		0.0011979		8					
Total		0.0096316				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.08	23.2	0.4961	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.971	0.741	0.8963	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-006		5	0.115	0.0808	0.15	0.124	0.087	0.151	0.0125	24.18%	-3.96%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-006		0.087	0.087	0.128	0.151	0.124					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 56 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-5331-5990		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed nickel				34.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.286	1.86	0.038	8	CDF	0.6089	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.98	2.29	0.2513	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000841		0.0000841		1	0.0817	0.7823	Non-Significant Effect		
Error		0.0082368		0.0010296		8					
Total		0.0083209				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.66	23.2	0.2366	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.976	0.741	0.9412	Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
59517-007		5	0.105	0.0791	0.131	0.104	0.076	0.135	0.0094	19.98%	5.23%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
59517-007		0.102	0.076	0.104	0.109	0.135					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-9157-6566		Endpoint: Nickel					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed nickel				36.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.21	1.86	0.041	8	CDF	0.5804	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4434		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000529		0.0000529		1	0.0439	0.8392	Non-Significant Effect			
Error	0.0096352		0.0012044		8						
Total	0.0096881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.04	23.2	0.5057		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.973	0.741	0.9149		Normal Distribution			
Nickel Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.111	0.0611	0.161	0.102	0.063	0.171	0.018	36.23%	0.00%
29517-008		5	0.106	0.0715	0.141	0.101	0.078	0.14	0.0126	26.44%	4.14%
Nickel Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.094	0.063	0.125	0.171	0.102					
29517-008		0.14	0.131	0.101	0.082	0.078					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-2347-4571		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:50		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed zinc				11.01%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.04	1.86	0.667	8	CDF	0.1651	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.63	2.29	0.8436		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.34596		0.34596		1	1.07	0.3302	Non-Significant Effect			
Error	2.57488		0.32186		8						
Total	2.92084				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.29	23.2	0.4418		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.914	0.741	0.3125		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-001		5	6.43	5.6	7.26	6.4	5.78	7.3	0.299	10.41%	-6.14%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-001		5.79	6.4	5.78	7.3	6.88					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-6406-1179		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed zinc			9.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	1.97	1.86	0.585	8	CDF	0.0425	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.72	2.29	0.6432		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.95481		0.95481		1	3.86	0.0849	Non-Significant Effect			
Error	1.9774		0.247175		8						
Total	2.93221				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.53	23.2	0.6917		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4752		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-002		5	6.68	6	7.35	6.8	5.87	7.22	0.244	8.19%	-10.20%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-002		6.41	6.8	7.08	5.87	7.22					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 01-9125-9301		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed zinc			8.39%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	2.11	1.86	0.508	8	CDF	0.0337	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.61	2.29	0.8718		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.83521		0.83521		1	4.47	0.0674	Non-Significant Effect			
Error	1.4946		0.186825		8						
Total	2.32981				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.1	23.2	0.9294		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.96	0.741	0.7914		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-003		5	6.64	6.11	7.16	6.54	6.17	7.09	0.189	6.36%	-9.54%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-003		7.09	7.06	6.32	6.54	6.17					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 17-4229-7757		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed zinc			8.63%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	2.35	1.86	0.523	8	CDF	0.0234	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9817		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.089		1.089		1	5.51	0.0468	Significant Effect			
Error	1.57976		0.19747		8						
Total	2.66876				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.02	23.2	0.9859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6954		Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-004		5	6.72	6.16	7.27	6.66	6.22	7.26	0.2	6.65%	-10.89%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-004		6.37	6.66	6.22	7.26	7.08					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 15-0624-1674		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed zinc			10.05%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.58	1.86	0.609	8	CDF	0.2888	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.73	2.29	0.6313	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0902501		0.0902501		1	0.337	0.5776	Non-Significant Effect		
Error		2.14276		0.267845		8					
Total		2.23301				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.74	23.2	0.6053	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.93	0.741	0.4456	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-005		5	6.25	5.52	6.97	6.36	5.65	7.09	0.261	9.33%	-3.14%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-005		5.65	6.4	7.09	5.74	6.36					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 17-4188-4908		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed zinc			7.93%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	2.72	1.86	0.481	8	CDF	0.0132	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.71	2.29	0.6671		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.23201		1.23201		1	7.37	0.0264	Significant Effect			
Error	1.33648		0.16706		8						
Total	2.56849				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.41	23.2	0.7461		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.961	0.741	0.7953		Normal Distribution				
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-006		5	6.76	6.3	7.22	6.77	6.23	7.16	0.166	5.51%	-11.59%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-006		6.23	7.05	6.77	6.59	7.16					

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Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 07-5285-5694		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed zinc				10.55%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.97	1.89	0.639	7	CDF	0.0104	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	2.23112		2.23112		1		8.83	0.0208	Significant Effect		
Error	1.76888		0.252697		7						
Total	4				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.68	24.3	0.6145	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.936	0.701	0.5373	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
59517-007		4	7.06	6.15	7.97	7.07	6.38	7.72	0.287	8.12%	-16.54%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
59517-007		7.72	Outlier	6.38	6.86	7.28					

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 Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 06-1460-6432		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed zinc			61.70%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	16	n/a	0	8	Exact	0.0079	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.65	2.29	8.4E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	22.3503		22.3503		1	2.21	0.1752	Non-Significant Effect			
Error	80.8118		10.1015		8						
Total	103.162				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			102	23.2	5.6E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.713	0.741	0.0013		Non-Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
59517-007		5	9.05	3.49	14.6	7.28	6.38	17	2	49.44%	-49.36%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
59517-007		7.72	17	6.38	6.86	7.28					

CETIS Analytical Report

Report Date: 29 Nov-17 10:20 (p 66 of 66)
Test Code: 29525Nv-Met | 08-4659-7587

Bioaccumulation Evaluation - Metals - Nereis virens										EnviroSystems, Inc.	
Analysis ID: 03-8506-5515		Endpoint: Zinc					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:51		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed zinc			11.96%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.2	1.86	0.725	8	CDF	0.1320	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.63	2.29	0.8384	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.54756		0.54756		1	1.44	0.2640	Non-Significant Effect		
Error		3.036		0.3795		8					
Total		3.58356				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.88	23.2	0.3301	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.902	0.741	0.2276	Normal Distribution			
Zinc Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	6.06	5.51	6.61	6.1	5.4	6.64	0.198	7.30%	0.00%
29517-008		5	6.53	5.59	7.46	6.84	5.58	7.18	0.336	11.50%	-7.73%
Zinc Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	6.01	6.64	6.14	5.4	6.1					
29517-008		7.16	7.18	6.84	5.87	5.58					

28 day *Macoma nasuta*
Sediment Bioaccumulation Evaluation

Body Burden Data and Statistical Analysis Reports

PCB Congeners

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 18	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 28	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 44	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 52	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 66	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 87	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 101	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 105	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 118	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 128	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 138	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 153	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 170	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 180	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 187	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 195	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 206	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
PCB 209	0.965 U		0.901 U		0.906 U		0.865 U		0.94 U	
Total PCBs	36.67		34.24		34.43		32.87		35.72	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 1		REP4	*	REP5	*
					REP3	*				
PCB Congeners (ng/g wet wt.)										
PCB 8	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 18	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 28	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 44	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 52	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 66	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 87	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 101	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 105	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 118	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 128	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 138	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 153	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 170	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 180	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 187	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 195	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 206	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
PCB 209	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
Total PCBs	33.74		32.15		33.21		36.18		35.49	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 18	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 28	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 44	0.888	U	0.942	U	0.871	U	0.973	U	2.65	
PCB 52	0.888	U	1.1	J	0.878	J	0.973	U	1.06	J
PCB 66	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 87	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 101	2.01		0.942	U	1.62	J	1.96		2.68	
PCB 105	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 118	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 128	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 138	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 153	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 170	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 180	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 187	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 195	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 206	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
PCB 209	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
Total PCBs	35.99		36.11		34.61		38.95		40.91	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 3		REP4	*	REP5	*
					REP3	*				
PCB Congeners (ng/g wet wt.)										
PCB 8	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 18	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 28	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 44	2.06		2.35		1.73		2.27		2.41	
PCB 52	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 66	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 87	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 101	1.8	J	2.23		1.93		2.16		1.6	J
PCB 105	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 118	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 128	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 138	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 153	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 170	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 180	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 187	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 195	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 206	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
PCB 209	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
Total PCBs	39.75		40.07		36.12		42.59		39.91	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 18	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 28	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 44	2.12		2.58		2.89		3.48		0.986	U
PCB 52	0.865	J	0.874	U	0.958	J	0.846	U	0.986	U
PCB 66	0.846	U	0.874	U	0.97	J	0.846	U	0.986	U
PCB 87	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 101	2.38		2.98		2.39		3.21		2.42	
PCB 105	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 118	0.846	U	0.968	J	0.942	U	0.997	J	0.986	U
PCB 128	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 138	0.846	U	1.22	J	0.942	U	1.14	J	0.986	U
PCB 153	0.897	J	1.14	J	0.942	U	1.21	J	0.986	U
PCB 170	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 180	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 187	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 195	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 206	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
PCB 209	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
Total PCBs	37.90		42.25		42.68		43.76		40.34	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 18	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 28	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 44	2.41		3.62		2.32		2.66		2.34	
PCB 52	0.865	J	1.24	J	1.05	J	1.42	J	1.56	J
PCB 66	0.852	U	0.843	U	0.836	U	1.04	J	0.97	J
PCB 87	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 101	2.64		2.56		3.13		3.01		2.43	
PCB 105	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 118	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 128	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 138	0.853	J	0.843	U	0.993	J	1.26	J	1.3	J
PCB 153	0.852	U	0.843	U	1.16	J	1.49	J	0.885	J
PCB 170	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 180	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 187	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 195	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 206	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
PCB 209	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
Total PCBs	39.10		41.82		40.71		44.72		40.71	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT									
CONTAMINANT	Composite 6								
	REP1	*	REP2	*	REP3	*	REP4	*	REP5
PCB Congeners (ng/g wet wt.)									
PCB 8	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 18	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 28	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 44	2.44		2.39		2.57		2.68		1.85
PCB 52	3.16		2.79		2.8		2.41		2.27
PCB 66	1.59	J	1.43	J	1.56	J	1.42	J	1.18
PCB 87	0.914	U	0.906	U	1.09	J	0.983	J	0.921
PCB 101	4.2		2.83		3.23		3.08		2.74
PCB 105	1.32	J	0.906	U	1.63	J	1.3	J	0.921
PCB 118	1.22	J	1.28	J	1.48	J	1.28	J	1.03
PCB 128	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 138	1.65	J	1.66	J	2.14		1.65	J	1.7
PCB 153	1.58	J	1.3	J	1.34	J	1.49	J	1.41
PCB 170	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 180	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 187	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 195	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 206	0.914	U	0.906	U	0.868	U	0.936	U	0.921
PCB 209	0.914	U	0.906	U	0.868	U	0.936	U	0.921
Total PCBs	54.43		49.10		53.04		51.31		46.46
* = Qualifiers									
U Analyte not detected; below Method									
J Analyte estimated; detection below P									
NA Not Analyzed									

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	2.66		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 18	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 28	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 44	2.24		2.93		2.76		2.05		0.97 J	
PCB 52	2.87		3.14		3.45		2.97		2.3	
PCB 66	1.46 J		1.17 J		1.37 J		1.25 J		1.12 J	
PCB 87	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 101	2.54		2.47		2.52		1.87 J		2.1	
PCB 105	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 118	1.17 J		0.864 U		0.951 J		0.947 U		0.934 U	
PCB 128	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 138	1.38 J		1.29 J		1.27 J		1.21 J		1.07 J	
PCB 153	1.32 J		1.6 J		1.1 J		1.1 J		0.934 U	
PCB 170	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 180	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 187	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 195	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 206	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
PCB 209	0.84 U		0.864 U		0.877 U		0.947 U		0.934 U	
Total PCBs	49.76		47.66		47.89		45.52		41.27	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 18	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 28	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 44	2.04		3.16		0.976	J	0.843	U	3.07	
PCB 52	2.1		3.31		2.08		2.66		2.9	
PCB 66	0.94	J	0.901	U	1.11	J	0.843	U	0.917	U
PCB 87	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 101	2.14		2.39		0.938	U	1.95		2.78	
PCB 105	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 118	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 128	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 138	1.5	J	1.5	J	0.938	U	0.843	U	1.08	J
PCB 153	0.888	U	1.38	J	1.24	J	0.843	U	0.928	J
PCB 170	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 180	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 187	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 195	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 206	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
PCB 209	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
Total PCBs	42.30		48.71		38.95		37.88		47.19	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:25 (p 1 of 2)

Test Code/ID: 09-8839-5661/29524Mn-PCB

Bioaccumulation Evaluation - PCB Congeners - Macoma																			EnviroSystems, Inc.		
Start Date: 29 Aug-17			Species: Macoma nasuta								Sample Code: 29524-000										
End Date: 26 Sep-17			Protocol: US ACE NED RIM (2004)								Sample Source: New Haven Harbor FNP -2017										
Sample Date: 29 Aug-17			Material: Laboratory Control Sediment								Sample Station: Laboratory Control - 29524										
Sample	Rep	Pos	PCB 008	PCB 018	PCB 028	PCB 044	PCB 052	PCB 066	PCB 101	PCB 105	PCB 118	PCB 128	PCB 138	PCB 153	PCB 170	PCB 180	PCB 187	PCB 195	PCB 206	PCB 209	PCB 087
29524-000	1	9																			
29524-000	2	20																			
29524-000	3	22																			
29524-000	4	31																			
29524-000	5	41																			
29517-009	1	8	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
29517-009	2	13	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901
29517-009	3	26	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906
29517-009	4	38	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
29517-009	5	42	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
29517-001	1	4	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888
29517-001	2	17	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846	0.846
29517-001	3	21	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874
29517-001	4	35	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952
29517-001	5	44	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934
29517-002	1	6	0.888	0.888	0.888	0.888	0.888	0.888	2.01	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888
29517-002	2	15	0.942	0.942	0.942	0.942	1.1	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
29517-002	3	29	0.871	0.871	0.871	0.871	0.878	0.871	1.62	0.871	0.871	0.871	0.871	0.871	0.871	0.871	0.871	0.871	0.871	0.871	0.871
29517-002	4	37	0.973	0.973	0.973	0.973	0.973	0.973	1.96	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
29517-002	5	48	0.879	0.879	0.879	2.65	1.06	0.879	2.68	0.879	0.879	0.879	0.879	0.879	0.879	0.879	0.879	0.879	0.879	0.879	0.879
29517-003	1	10	0.942	0.942	0.942	2.06	0.942	0.942	1.8	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
29517-003	2	12	0.909	0.909	0.909	2.35	0.909	0.909	2.23	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.909
29517-003	3	30	0.847	0.847	0.847	1.73	0.847	0.847	1.93	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
29517-003	4	40	0.992	0.992	0.992	2.27	0.992	0.992	2.16	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
29517-003	5	47	0.938	0.938	0.938	2.41	0.938	0.938	1.6	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
29517-004	1	7	0.846	0.846	0.846	2.12	0.865	0.846	2.38	0.846	0.846	0.846	0.846	0.897	0.846	0.846	0.846	0.846	0.846	0.846	0.846
29517-004	2	14	0.874	0.874	0.874	2.58	0.874	0.874	2.98	0.874	0.968	0.874	1.22	1.14	0.874	0.874	0.874	0.874	0.874	0.874	0.874
29517-004	3	28	0.942	0.942	0.942	2.89	0.958	0.97	2.39	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
29517-004	4	39	0.846	0.846	0.846	3.48	0.846	0.846	3.21	0.846	0.997	0.846	1.14	1.21	0.846	0.846	0.846	0.846	0.846	0.846	0.846
29517-004	5	46	0.986	0.986	0.986	0.986	0.986	0.986	2.42	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
29517-005	1	3	0.852	0.852	0.852	2.41	0.865	0.852	2.64	0.852	0.852	0.852	0.853	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.852
29517-005	2	18	0.843	0.843	0.843	3.62	1.24	0.843	2.56	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:25 (p 2 of 2)

Test Code/ID: 09-8839-5661/29524Mn-PCB

Sample	Rep	Pos	PBC 008	PCB 018	PCB 028	PCB 044	PCB 052	PCB 066	PCB 101	PCB 105	PCB 118	PCB 128	PCB 138	PCB 153	PCB 170	PCB 180	PCB 187	PCB 195	PCB 206	PCB 209	PCB 087
29517-005	3	23	0.836	0.836	0.836	2.32	1.05	0.836	3.13	0.836	0.836	0.836	0.993	1.16	0.836	0.836	0.836	0.836	0.836	0.836	0.836
29517-005	4	32	0.883	0.883	0.883	2.66	1.42	1.04	3.01	0.883	0.883	0.883	1.26	1.49	0.883	0.883	0.883	0.883	0.883	0.883	0.883
29517-005	5	50	0.836	0.836	0.836	2.34	1.56	0.97	2.43	0.836	0.836	0.836	1.3	0.885	0.836	0.836	0.836	0.836	0.836	0.836	0.836
29517-006	1	1	0.914	0.914	0.914	2.44	3.16	1.59	4.2	1.32	1.22	0.914	1.65	1.58	0.914	0.914	0.914	0.914	0.914	0.914	0.914
29517-006	2	16	0.906	0.906	0.906	2.39	2.79	1.43	2.83	0.906	1.28	0.906	1.66	1.3	0.906	0.906	0.906	0.906	0.906	0.906	0.906
29517-006	3	25	0.868	0.868	0.868	2.57	2.8	1.56	3.23	1.63	1.48	0.868	2.14	1.34	0.868	0.868	0.868	0.868	0.868	0.868	1.09
29517-006	4	36	0.936	0.936	0.936	2.68	2.41	1.42	3.08	1.3	1.28	0.936	1.65	1.49	0.936	0.936	0.936	0.936	0.936	0.936	0.983
29517-006	5	43	0.921	0.921	0.921	1.85	2.27	1.18	2.74	0.921	1.03	0.921	1.7	1.41	0.921	0.921	0.921	0.921	0.921	0.921	0.921
59517-007	1	2	2.66	0.84	0.84	2.24	2.87	1.46	2.54	0.84	1.17	0.84	1.38	1.32	0.84	0.84	0.84	0.84	0.84	0.84	0.84
59517-007	2	19	0.864	0.864	0.864	2.93	3.14	1.17	2.47	0.864	0.864	0.864	1.29	1.6	0.864	0.864	0.864	0.864	0.864	0.864	0.864
59517-007	3	27	0.877	0.877	0.877	2.76	3.45	1.37	2.52	0.877	0.951	0.877	1.27	1.1	0.877	0.877	0.877	0.877	0.877	0.877	0.877
59517-007	4	33	0.947	0.947	0.947	2.05	2.97	1.25	1.87	0.947	0.947	0.947	1.21	1.1	0.947	0.947	0.947	0.947	0.947	0.947	0.947
59517-007	5	49	0.934	0.934	0.934	0.97	2.3	1.12	2.1	0.934	0.934	0.934	1.07	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934
29517-008	1	5	0.888	0.888	0.888	2.04	2.1	0.94	2.14	0.888	0.888	0.888	1.5	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888
29517-008	2	11	0.901	0.901	0.901	3.16	3.31	0.901	2.39	0.901	0.901	0.901	1.5	1.38	0.901	0.901	0.901	0.901	0.901	0.901	0.901
29517-008	3	24	0.938	0.938	0.938	0.976	2.08	1.11	0.938	0.938	0.938	0.938	0.938	1.24	0.938	0.938	0.938	0.938	0.938	0.938	0.938
29517-008	4	34	0.843	0.843	0.843	0.843	2.66	0.843	1.95	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
29517-008	5	45	0.917	0.917	0.917	3.07	2.9	0.917	2.78	0.917	0.917	0.917	1.08	0.928	0.917	0.917	0.917	0.917	0.917	0.917	0.917

CETIS Summary Report

Report Date: 14 Nov-17 13:35 (p 1 of 14)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
Batch ID:	09-0341-0484	Test Type:	Bioaccumulation - PCBs - Mn	Analyst:	Nancy Roka	
Start Date:	29 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	26 Sep-17	Species:	Macoma nasuta	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
01-3401-4341	PCB 008	Equal Variance t Two-Sample Test	0.7297	29517-001	passed	pcb 008
21-2528-7785	PCB 008	Equal Variance t Two-Sample Test	0.5701	29517-002	passed	pcb 008
19-9808-0285	PCB 008	Equal Variance t Two-Sample Test	0.3684	29517-003	passed	pcb 008
02-6465-7867	PCB 008	Equal Variance t Two-Sample Test	0.6866	29517-004	passed	pcb 008
01-4882-7274	PCB 008	Equal Variance t Two-Sample Test	0.9953	29517-005	passed	pcb 008
13-8550-0244	PCB 008	Equal Variance t Two-Sample Test	0.6180	29517-006	passed	pcb 008
07-1997-1631	PCB 008	Equal Variance t Two-Sample Test	0.6398	59517-007	passed	pcb 008
21-0670-6662	PCB 008	Wilcoxon Rank Sum Two-Sample Test	0.5000	59517-007	passed	pcb 008
20-4076-6263	PCB 008	Equal Variance t Two-Sample Test	0.7676	29517-008	passed	pcb 008
21-3023-5965	PCB 018	Equal Variance t Two-Sample Test	0.7297	29517-001	passed	pcb 018
14-9964-6066	PCB 018	Equal Variance t Two-Sample Test	0.5701	29517-002	passed	pcb 018
21-0946-8079	PCB 018	Equal Variance t Two-Sample Test	0.3684	29517-003	passed	pcb 018
17-8232-3401	PCB 018	Equal Variance t Two-Sample Test	0.6866	29517-004	passed	pcb 018
03-9480-3809	PCB 018	Equal Variance t Two-Sample Test	0.9953	29517-005	passed	pcb 018
05-4216-9156	PCB 018	Equal Variance t Two-Sample Test	0.6180	29517-006	passed	pcb 018
14-0021-2062	PCB 018	Equal Variance t Two-Sample Test	0.7918	59517-007	passed	pcb 018
00-7251-8032	PCB 018	Equal Variance t Two-Sample Test	0.7676	29517-008	passed	pcb 018
17-2065-7433	PCB 028	Equal Variance t Two-Sample Test	0.7297	29517-001	passed	pcb 028
19-2514-6271	PCB 028	Equal Variance t Two-Sample Test	0.5701	29517-002	passed	pcb 028
13-7996-2806	PCB 028	Equal Variance t Two-Sample Test	0.3684	29517-003	passed	pcb 028
01-2630-5410	PCB 028	Equal Variance t Two-Sample Test	0.6866	29517-004	passed	pcb 028
07-6582-4051	PCB 028	Equal Variance t Two-Sample Test	0.9953	29517-005	passed	pcb 028
13-6601-6668	PCB 028	Equal Variance t Two-Sample Test	0.6180	29517-006	passed	pcb 028
11-9886-0205	PCB 028	Equal Variance t Two-Sample Test	0.7918	59517-007	passed	pcb 028
02-5307-1438	PCB 028	Equal Variance t Two-Sample Test	0.7676	29517-008	passed	pcb 028
05-5292-2215	PCB 044	Equal Variance t Two-Sample Test	0.7297	29517-001	passed	pcb 044
07-3882-5706	PCB 044	Equal Variance t Two-Sample Test	0.4582	29517-002	passed	pcb 044

CETIS Summary Report

Report Date: 14 Nov-17 13:35 (p 2 of 14)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
11-7153-7399	PCB 044	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-002 passed pcb 044
05-2342-4213	PCB 044	Equal Variance t Two-Sample Test	1.2E-07	29517-003 failed pcb 044
03-4402-6865	PCB 044	Unequal Variance t Two-Sample Test	2.8E-04	29517-003 failed pcb 044
13-9562-3016	PCB 044	Unequal Variance t Two-Sample Test	0.0117	29517-004 failed pcb 044
15-3174-0055	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 044
07-1923-5882	PCB 044	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed pcb 044
17-5085-1048	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 044
16-5018-6623	PCB 044	Unequal Variance t Two-Sample Test	2.6E-04	29517-006 failed pcb 044
01-8719-0908	PCB 044	Unequal Variance t Two-Sample Test	0.0105	59517-007 failed pcb 044
08-2503-1595	PCB 044	Unequal Variance t Two-Sample Test	0.0024	59517-007 failed pcb 044
15-3055-2889	PCB 044	Unequal Variance t Two-Sample Test	0.0448	29517-008 failed pcb 044
10-5448-6022	PCB 052	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 052
06-7469-2984	PCB 052	Equal Variance t Two-Sample Test	0.1072	29517-002 passed pcb 052
19-1560-2528	PCB 052	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 052
04-7524-7097	PCB 052	Equal Variance t Two-Sample Test	0.6119	29517-004 passed pcb 052
20-0616-5307	PCB 052	Unequal Variance t Two-Sample Test	0.0342	29517-005 failed pcb 052
20-6503-3479	PCB 052	Unequal Variance t Two-Sample Test	1.8E-04	29517-006 failed pcb 052
13-5223-4322	PCB 052	Unequal Variance t Two-Sample Test	2.2E-04	59517-007 failed pcb 052
03-5172-5461	PCB 052	Unequal Variance t Two-Sample Test	0.0010	29517-008 failed pcb 052
02-1757-7072	PCB 066	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 066
05-8822-8317	PCB 066	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 066
00-6409-9308	PCB 066	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 066
13-2918-5234	PCB 066	Equal Variance t Two-Sample Test	0.6191	29517-004 passed pcb 066
03-4852-4410	PCB 066	Equal Variance t Two-Sample Test	0.5622	29517-005 passed pcb 066
01-6291-2853	PCB 066	Equal Variance t Two-Sample Test	5.7E-05	29517-006 failed pcb 066
11-5047-0504	PCB 066	Equal Variance t Two-Sample Test	1.4E-06	29517-006 failed pcb 066
03-8859-8275	PCB 066	Equal Variance t Two-Sample Test	2.8E-04	59517-007 failed pcb 066
15-9657-3880	PCB 066	Equal Variance t Two-Sample Test	0.2963	29517-008 passed pcb 066
20-0653-8923	PCB 066	Equal Variance t Two-Sample Test	0.7063	29517-008 passed pcb 066
20-3611-6407	PCB 087	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 087
09-7834-9527	PCB 087	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 087
09-1900-5977	PCB 087	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 087
17-9182-0322	PCB 087	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 087
07-3049-6531	PCB 087	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 087
14-0485-2257	PCB 087	Equal Variance t Two-Sample Test	0.1273	29517-006 passed pcb 087
08-3902-9788	PCB 087	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 087
07-2970-8696	PCB 087	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 087
05-0648-4173	PCB 101	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 101
03-7762-8840	PCB 101	Unequal Variance t Two-Sample Test	0.0154	29517-002 failed pcb 101
05-6612-3814	PCB 101	Unequal Variance t Two-Sample Test	4.6E-04	29517-003 failed pcb 101
20-1685-4348	PCB 101	Unequal Variance t Two-Sample Test	2.8E-04	29517-004 failed pcb 101
16-0903-8644	PCB 101	Unequal Variance t Two-Sample Test	8.6E-05	29517-005 failed pcb 101
01-0112-9608	PCB 101	Unequal Variance t Two-Sample Test	1.9E-04	29517-006 failed pcb 101
00-7077-2914	PCB 101	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-006 failed pcb 101
10-5204-8366	PCB 101	Unequal Variance t Two-Sample Test	2.6E-04	59517-007 failed pcb 101
13-1547-9736	PCB 101	Unequal Variance t Two-Sample Test	0.0022	29517-008 failed pcb 101
13-2449-8693	PCB 101	Unequal Variance t Two-Sample Test	0.0110	29517-008 failed pcb 101
00-0984-8163	PCB 105	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 105
04-1967-8768	PCB 105	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 105
05-9782-9917	PCB 105	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 105
02-4976-4389	PCB 105	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 105
18-1691-5781	PCB 105	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 105
02-6743-3737	PCB 105	Unequal Variance t Two-Sample Test	0.0473	29517-006 failed pcb 105

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Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
20-3850-4485	PCB 105	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 105
07-8509-7582	PCB 105	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 105
20-8410-8833	PCB 118	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 118
00-0851-8724	PCB 118	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 118
07-7001-9350	PCB 118	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 118
08-7717-0058	PCB 118	Equal Variance t Two-Sample Test	0.1711	29517-004 passed pcb 118
12-2603-9870	PCB 118	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 118
09-9395-2424	PCB 118	Equal Variance t Two-Sample Test	8.5E-04	29517-006 failed pcb 118
05-2067-9518	PCB 118	Equal Variance t Two-Sample Test	0.1597	59517-007 passed pcb 118
06-8698-4166	PCB 118	Equal Variance t Two-Sample Test	0.3772	59517-007 passed pcb 118
07-3834-0018	PCB 118	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 118
03-3086-4818	PCB 128	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 128
09-0541-6358	PCB 128	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 128
00-5938-4069	PCB 128	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 128
00-0419-2043	PCB 128	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 128
05-6289-3555	PCB 128	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 128
15-7189-8105	PCB 128	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 128
10-8038-7954	PCB 128	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 128
08-2368-8301	PCB 128	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 128
20-4530-2369	PCB 138	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 138
00-3453-4037	PCB 138	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 138
08-2206-8682	PCB 138	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 138
18-9554-1230	PCB 138	Equal Variance t Two-Sample Test	0.0747	29517-004 passed pcb 138
19-7358-6580	PCB 138	Unequal Variance t Two-Sample Test	0.1238	29517-005 passed pcb 138
18-3545-5667	PCB 138	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 138
05-4509-5581	PCB 138	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-006 failed pcb 138
14-1160-2788	PCB 138	Equal Variance t Two-Sample Test	1.5E-04	59517-007 failed pcb 138
07-6723-2150	PCB 138	Unequal Variance t Two-Sample Test	0.0704	29517-008 passed pcb 138
19-2105-8838	PCB 153	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 153
01-0124-0300	PCB 153	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 153
19-0204-3929	PCB 153	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 153
16-7535-8103	PCB 153	Equal Variance t Two-Sample Test	0.0456	29517-004 failed pcb 153
01-9757-3208	PCB 153	Equal Variance t Two-Sample Test	0.3925	29517-005 passed pcb 153
16-7410-5026	PCB 153	Unequal Variance t Two-Sample Test	0.1804	29517-005 passed pcb 153
01-8584-6062	PCB 153	Equal Variance t Two-Sample Test	6.2E-06	29517-006 failed pcb 153
08-5281-6886	PCB 153	Unequal Variance t Two-Sample Test	0.0320	59517-007 failed pcb 153
10-7209-8627	PCB 153	Unequal Variance t Two-Sample Test	0.1323	29517-008 passed pcb 153
15-2501-9075	PCB 170	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 170
16-3352-8632	PCB 170	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 170
19-2937-2513	PCB 170	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 170
08-3555-4550	PCB 170	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 170
09-1907-9441	PCB 170	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 170
00-9695-6323	PCB 170	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 170
20-9300-6327	PCB 170	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 170
12-3902-4391	PCB 170	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 170
20-3703-3316	PCB 180	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 180
14-3485-5081	PCB 180	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 180
13-8012-5530	PCB 180	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 180
20-8925-5370	PCB 180	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 180
12-6402-5998	PCB 180	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 180
21-1513-3208	PCB 180	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 180
18-7120-3478	PCB 180	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 180
03-3907-5820	PCB 180	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 180

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Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-9836-8791	PCB 187	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 187
06-4836-2137	PCB 187	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 187
05-2123-4958	PCB 187	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 187
10-5407-9303	PCB 187	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 187
16-2700-1510	PCB 187	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 187
04-2599-8611	PCB 187	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 187
18-3725-2830	PCB 187	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 187
17-9305-4908	PCB 187	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 187
18-0081-8947	PCB 195	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 195
14-1729-6498	PCB 195	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 195
02-2131-4115	PCB 195	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 195
17-8286-1230	PCB 195	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 195
13-8950-6518	PCB 195	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 195
00-9400-8386	PCB 195	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 195
02-3983-7416	PCB 195	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 195
04-2466-2886	PCB 195	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 195
06-4652-5142	PCB 206	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 206
07-7381-9859	PCB 206	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 206
18-8397-2866	PCB 206	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 206
10-0614-6581	PCB 206	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 206
16-4544-5935	PCB 206	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 206
18-9064-4310	PCB 206	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 206
02-0679-3604	PCB 206	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 206
14-7762-4505	PCB 206	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 206
08-5245-6528	PCB 209	Equal Variance t Two-Sample Test	0.7297	29517-001 passed pcb 209
17-0258-0581	PCB 209	Equal Variance t Two-Sample Test	0.5701	29517-002 passed pcb 209
09-7983-6093	PCB 209	Equal Variance t Two-Sample Test	0.3684	29517-003 passed pcb 209
01-7881-8570	PCB 209	Equal Variance t Two-Sample Test	0.6866	29517-004 passed pcb 209
18-7488-8642	PCB 209	Equal Variance t Two-Sample Test	0.9953	29517-005 passed pcb 209
04-9352-2417	PCB 209	Equal Variance t Two-Sample Test	0.6180	29517-006 passed pcb 209
15-9322-5661	PCB 209	Equal Variance t Two-Sample Test	0.7918	59517-007 passed pcb 209
03-7461-2719	PCB 209	Equal Variance t Two-Sample Test	0.7676	29517-008 passed pcb 209

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Bioaccumulation Evaluation - PCB Congeners - Macoma											EnviroSystems, Inc.
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	1.26	0.281	2.23	0.864	2.66	0.351	0.785	62.52%	-37.25%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	1.26	0.302	2.23	0.871	2.65	0.347	0.775	61.31%	-38.17%
29517-003		5	2.16	1.82	2.51	1.73	2.41	0.124	0.276	12.77%	-136.40%
29517-004		5	2.41	1.25	3.58	0.986	3.48	0.419	0.938	38.88%	-163.40%
29517-005		5	2.67	1.99	3.35	2.32	3.62	0.245	0.548	20.53%	-191.68%
29517-006		5	2.39	1.99	2.78	1.85	2.68	0.143	0.32	13.43%	-160.65%
59517-007		5	2.19	1.23	3.15	0.97	2.93	0.345	0.772	35.24%	-139.24%
29517-008		5	2.02	0.647	3.39	0.843	3.16	0.494	1.1	54.73%	-120.43%

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Bioaccumulation Evaluation - PCB Congeners - Macoma											EnviroSystems, Inc.
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.98	0.856	1.1	0.878	1.1	0.0446	0.0996	10.17%	-7.04%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.906	0.829	0.983	0.846	0.986	0.0278	0.0621	6.85%	1.05%
29517-005		5	1.23	0.881	1.57	0.865	1.56	0.125	0.279	22.71%	-34.04%
29517-006		5	2.69	2.25	3.12	2.27	3.16	0.158	0.353	13.13%	-193.42%
59517-007		5	2.95	2.42	3.47	2.3	3.45	0.189	0.423	14.35%	-221.83%
29517-008		5	2.61	1.95	3.27	2.08	3.31	0.236	0.529	20.25%	-185.12%
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.904	0.819	0.989	0.846	0.986	0.0306	0.0684	7.56%	1.20%
29517-005		5	0.908	0.794	1.02	0.836	1.04	0.0411	0.0919	10.12%	0.79%
29517-006		5	1.44	1.23	1.64	1.18	1.59	0.0724	0.162	11.28%	-56.87%
59517-007		5	1.27	1.1	1.45	1.12	1.46	0.0628	0.14	11.03%	-39.17%
29517-008		5	0.942	0.818	1.07	0.843	1.11	0.0449	0.1	10.66%	-2.93%
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.963	0.867	1.06	0.906	1.09	0.0346	0.0774	8.04%	-5.18%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	1.84	1.06	2.63	0.942	2.68	0.283	0.633	34.37%	-101.27%
29517-003		5	1.94	1.62	2.27	1.6	2.23	0.116	0.259	13.31%	-112.37%
29517-004		5	2.68	2.19	3.16	2.38	3.21	0.175	0.391	14.62%	-192.33%
29517-005		5	2.75	2.38	3.13	2.43	3.13	0.135	0.301	10.93%	-200.85%
29517-006		5	3.22	2.49	3.94	2.74	4.2	0.261	0.584	18.15%	-251.32%
59517-007		5	2.3	1.93	2.67	1.87	2.54	0.134	0.3	13.04%	-151.26%
29517-008		5	2.04	1.18	2.9	0.938	2.78	0.308	0.69	33.81%	-122.81%

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Bioaccumulation Evaluation - PCB Congeners - Macoma											EnviroSystems, Inc.
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	1.22	0.837	1.59	0.906	1.63	0.136	0.305	25.10%	-32.77%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.948	0.873	1.02	0.846	0.997	0.0271	0.0606	6.39%	-3.54%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	1.26	1.06	1.46	1.03	1.48	0.072	0.161	12.80%	-37.43%
59517-007		5	0.973	0.83	1.12	0.864	1.17	0.0517	0.116	11.87%	-6.31%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	1.03	0.839	1.21	0.846	1.22	0.0677	0.151	14.74%	-12.17%
29517-005		5	1.05	0.778	1.32	0.843	1.3	0.0979	0.219	20.84%	-14.68%
29517-006		5	1.76	1.49	2.03	1.65	2.14	0.0954	0.213	12.13%	-92.27%
59517-007		5	1.24	1.1	1.39	1.07	1.38	0.0513	0.115	9.23%	-35.90%
29517-008		5	1.17	0.786	1.56	0.843	1.5	0.139	0.311	26.52%	-28.05%

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Bioaccumulation Evaluation - PCB Congeners - Macoma											EnviroSystems, Inc.
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	1.04	0.869	1.2	0.897	1.21	0.0599	0.134	12.94%	-13.07%
29517-005		5	1.05	0.698	1.39	0.843	1.49	0.125	0.281	26.82%	-14.27%
29517-006		5	1.42	1.28	1.56	1.3	1.58	0.0507	0.113	7.95%	-55.56%
59517-007		5	1.21	0.891	1.53	0.934	1.6	0.115	0.257	21.24%	-32.27%
29517-008		5	1.06	0.759	1.35	0.843	1.38	0.107	0.239	22.65%	-15.34%
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%

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Bioaccumulation Evaluation - PCB Congeners - Macoma											EnviroSystems, Inc.
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%

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Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
PCB 008 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		2.66	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 018 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 028 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 044 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	2.65
29517-003		2.06	2.35	1.73	2.27	2.41
29517-004		2.12	2.58	2.89	3.48	0.986
29517-005		2.41	3.62	2.32	2.66	2.34
29517-006		2.44	2.39	2.57	2.68	1.85
59517-007		2.24	2.93	2.76	2.05	0.97
29517-008		2.04	3.16	0.976	0.843	3.07

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Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
PCB 052 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	1.1	0.878	0.973	1.06
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.865	0.874	0.958	0.846	0.986
29517-005		0.865	1.24	1.05	1.42	1.56
29517-006		3.16	2.79	2.8	2.41	2.27
59517-007		2.87	3.14	3.45	2.97	2.3
29517-008		2.1	3.31	2.08	2.66	2.9
PCB 066 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.97	0.846	0.986
29517-005		0.852	0.843	0.836	1.04	0.97
29517-006		1.59	1.43	1.56	1.42	1.18
59517-007		1.46	1.17	1.37	1.25	1.12
29517-008		0.94	0.901	1.11	0.843	0.917
PCB 087 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	1.09	0.983	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 101 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		2.01	0.942	1.62	1.96	2.68
29517-003		1.8	2.23	1.93	2.16	1.6
29517-004		2.38	2.98	2.39	3.21	2.42
29517-005		2.64	2.56	3.13	3.01	2.43
29517-006		4.2	2.83	3.23	3.08	2.74
59517-007		2.54	2.47	2.52	1.87	2.1
29517-008		2.14	2.39	0.938	1.95	2.78

CETIS Summary Report

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
PCB 105 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		1.32	0.906	1.63	1.3	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 118 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.968	0.942	0.997	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		1.22	1.28	1.48	1.28	1.03
59517-007		1.17	0.864	0.951	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 128 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 138 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	1.22	0.942	1.14	0.986
29517-005		0.853	0.843	0.993	1.26	1.3
29517-006		1.65	1.66	2.14	1.65	1.7
59517-007		1.38	1.29	1.27	1.21	1.07
29517-008		1.5	1.5	0.938	0.843	1.08

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Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
PCB 153 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.897	1.14	0.942	1.21	0.986
29517-005		0.852	0.843	1.16	1.49	0.885
29517-006		1.58	1.3	1.34	1.49	1.41
59517-007		1.32	1.6	1.1	1.1	0.934
29517-008		0.888	1.38	1.24	0.843	0.928
PCB 170 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 180 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 187 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917

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Bioaccumulation Evaluation - PCB Congeners - Macoma						EnviroSystems, Inc.
PCB 195 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 206 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
PCB 209 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917

CETIS Analytical Report

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-3401-4341		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 008			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 2 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-2528-7785		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 008				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-9808-0285		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 008			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 4 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-6465-7867		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 008			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution				
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-4882-7274		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 008			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0106929		0.0106929		1	11.5	0.0095	Significant Effect		
Error		0.0074352		0.0009294		8					
Total		0.0181281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-8550-0244		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 008				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-0670-6662		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed pcb 008			71.44%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	27	n/a	0	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	5.0E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.290703		0.290703		1	0.94	0.3606	Non-Significant Effect			
Error	2.47359		0.309198		8						
Total	2.76429				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			418	23.2	3.4E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.667	0.741	3.5E-04		Non-Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	1.26	0.281	2.23		0.864	2.66	0.351	62.52%	-37.25%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		2.66	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-1997-1631		Endpoint: PCB 008				CETIS Version: CETISv1.9.3					
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 008				5.50%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.373	1.89	0.050	7	CDF	0.6398	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002178		0.0002178		1	0.139	0.7203	Non-Significant Effect			
Error	0.0109702		0.0015672		7						
Total	0.011188				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.15	24.3	0.8649	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.926	0.701	0.4438	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		4	0.906	0.84	0.971		0.864	0.947	0.0206	4.54%	1.08%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		Outlier	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-4076-6263		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 008			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-3023-5965		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed pcb 018				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect		
Error		0.01349		0.0016863		8					
Total		0.0141789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-9964-6066		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 018			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-0946-8079		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 018			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-8232-3401		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 018			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-9480-3809		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 018				3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution				
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-4216-9156		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed pcb 018			4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-0021-2062		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 018				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-7251-8032		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed pcb 018				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Report Date: 14 Nov-17 13:33 (p 18 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-2065-7433		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 028			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-2514-6271		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 028			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-7996-2806		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 028			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-2630-5410		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed pcb 028				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.65	23.2	0.3674		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 22 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-6582-4051		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 028			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 23 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-6601-6668		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed pcb 028				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Report Date: 14 Nov-17 13:33 (p 24 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-9886-0205		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed pcb 028			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 25 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5307-1438		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 028			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Report Date: 14 Nov-17 13:33 (p 26 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-5292-2215		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 044				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Report Date: 14 Nov-17 13:33 (p 27 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-3882-5706		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 044				5.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.109	1.89	0.054	7	CDF	0.4582	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	2.136E-05		2.136E-05		1		0.0119	0.9164	Non-Significant Effect		
Error	0.0126102		0.0018015		7						
Total	0.0126315				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.52	24.3	0.6791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.921	0.701	0.3997	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		4	0.918	0.843	0.994		0.871	0.973	0.0236	5.15%	-0.34%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	Outlier					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 28 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-2342-4213		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 044			14.46%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.4	1.89	0.132	7	CDF	1.2E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4.09271		4.09271		1	377	2.4E-07	Significant Effect			
Error	0.0759762		0.0108537		7						
Total	4.16869				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				15.8	24.3	0.0220	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.913	0.701	0.3400	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		4	2.27	2.03	2.52		2.06	2.41	0.0764	6.73%	-148.25%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		2.06	2.35	Outlier	2.27	2.41					

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Report Date: 14 Nov-17 13:33 (p 29 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-9562-3016		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pcb 044			97.73%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	3.56	2.13	0.895	4	CDF	0.0117	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.28	2.29	0.0541	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.59354		5.59354		1	12.7	0.0074	Significant Effect			
Error	3.52197		0.440246		8						
Total	9.11551				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				596	23.2	1.7E-05	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.86	0.741	0.0763	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	2.41	1.25	3.58		0.986	3.48	0.419	38.88%	-163.40%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		2.12	2.58	2.89	3.48	0.986					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 30 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-3174-0055		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed pcb 044				14.78%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	21.2	1.89	0.135	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.11465		5.11465		1	451	1.3E-07	Significant Effect			
Error	0.0793763		0.0113395		7						
Total	5.19403				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				16.6	24.3	0.0202	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.867	0.701	0.1142	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		4	2.43	2.18	2.68		2.32	2.66	0.0782	6.43%	-165.73%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		2.41	Outlier	2.32	2.66	2.34					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-5018-6623		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 044			33.60%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	10.2	2.13	0.308	4	CDF	2.6E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.49	2.29	0.0090		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.40666		5.40666		1	104	7.4E-06	Significant Effect			
Error	0.416421		0.0520527		8						
Total	5.82308				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			69.6	23.2	0.0012		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.797	0.741	0.0133		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	2.39	1.99	2.78		1.85	2.68	0.143	13.43%	-160.65%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		2.44	2.39	2.57	2.68	1.85					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-2503-1595		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 044				53.83%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	7.54	2.35	0.493	3	CDF	0.0024	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	5.54475		5.54475		1		73.5	5.9E-05	Significant Effect		
Error	0.528401		0.0754859		7						
Total	6.07315				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				118	24.3	4.7E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.954	0.701	0.7393	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		4	2.5	1.83	3.16		2.05	2.93	0.209	16.73%	-172.56%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		2.24	2.93	2.76	2.05	Outlier					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-3055-2889		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 044			115.08%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.23	2.13	1.05	4	CDF	0.0448	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9202		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.03821		3.03821		1	4.98	0.0562	Non-Significant Effect			
Error	4.88364		0.610455		8						
Total	7.92186				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			827	23.2	8.8E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.857	0.741	0.0701		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	2.02	0.647	3.39		0.843	3.16	0.494	54.73%	-120.43%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		2.04	3.16	0.976	0.843	3.07					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-5448-6022		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 052			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-7469-2984		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed pcb 052				9.70%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	1.35	1.86	0.089	8	CDF	0.1072	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.69	2.29	0.7065	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0103684		0.0103684		1	1.82	0.2144	Non-Significant Effect			
Error	0.045618		0.0057023		8						
Total	0.0559864				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.73	23.2	0.0917	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.969	0.741	0.8839	Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.98	0.856	1.1		0.878	1.1	0.0446	10.17%	-7.04%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	1.1	0.878	0.973	1.06					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-1560-2528		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 052			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-7524-7097		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed pcb 052			6.63%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.294	1.86	0.061	8	CDF	0.6119	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.65	2.29	0.7938	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002304		0.0002304		1	0.0865	0.7762	Non-Significant Effect		
Error		0.02131		0.0026638		8					
Total		0.0215404				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.61	23.2	0.3752	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.927	0.741	0.4222	Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.906	0.829	0.983		0.846	0.986	0.0278	6.85%	1.05%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.865	0.874	0.958	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-0616-5307		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed pcb 052				29.30%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	2.48	2.13	0.268	4	CDF	0.0342	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.93	2.29	0.3112		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.242736		0.242736		1	6.13	0.0383	Significant Effect			
Error	0.316581		0.0395726		8						
Total	0.559318				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			52.6	23.2	0.0021		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6344		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	1.23	0.881	1.57		0.865	1.56	0.125	22.71%	-34.04%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.865	1.24	1.05	1.42	1.56					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-6503-3479		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pcb 052			36.96%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	11.2	2.13	0.338	4	CDF	1.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2	2.29	0.2305		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7.83756		7.83756		1	124	3.7E-06	Significant Effect			
Error	0.503621		0.0629527		8						
Total	8.34118				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			84.3	23.2	8.2E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.921	0.741	0.3692		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	2.69	2.25	3.12		2.27	3.16	0.158	13.13%	-193.42%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		3.16	2.79	2.8	2.41	2.27					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-5223-4322		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 052			44.22%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	10.7	2.13	0.405	4	CDF	2.2E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.28	2.29	0.0527	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	10.3083		10.3083		1	114	5.1E-06	Significant Effect			
Error	0.721221		0.0901527		8						
Total	11.0296				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				121	23.2	4.0E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.835	0.741	0.0387	Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	2.95	2.42	3.47		2.3	3.45	0.189	14.35%	-221.83%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		2.87	3.14	3.45	2.97	2.3					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-5172-5461		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 052				55.20%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	7.15	2.13	0.505	4	CDF	0.0010	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.98	2.29	0.2535		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7.17917		7.17917		1	51.1	9.7E-05	Significant Effect			
Error	1.1235		0.140438		8						
Total	8.30267				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			189	23.2	1.6E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.889	0.741	0.1667		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	2.61	1.95	3.27		2.08	3.31	0.236	20.25%	-185.12%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		2.1	3.31	2.08	2.66	2.9					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-1757-7072		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 066				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-8822-8317		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed pcb 066			5.35%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-6409-9308		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 066			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-2918-5234		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 066			7.13%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.314	1.86	0.065	8	CDF	0.6191	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0003025	0.0003025		1	0.0983	0.7619	Non-Significant Effect			
Error		0.0246084	0.0030761		8						
Total		0.0249109			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.17	23.2	0.2899	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.908	0.741	0.2692	Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.904	0.819	0.989		0.846	0.986	0.0306	7.56%	1.20%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.97	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-4852-4410		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 066				9.05%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-0.162	1.86	0.083	8	CDF	0.5622	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.98	2.29	0.2504	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001296		0.0001296		1	0.0261	0.8756	Non-Significant Effect			
Error	0.039714		0.0049643		8						
Total	0.0398436				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.73	23.2	0.1194	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3380	Normal Distribution				
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.908	0.794	1.02		0.836	1.04	0.0411	10.12%	0.79%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	1.04	0.97					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-6291-2853		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 066			15.12%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	6.99	1.86	0.138	8	CDF	5.7E-05	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.31	2.29	0.0445	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.677561		0.677561		1	48.9	1.1E-04	Significant Effect		
Error		0.110821		0.0138527		8					
Total		0.788382				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			17.8	23.2	0.0164	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.876	0.741	0.1175	Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	1.44	1.23	1.64		1.18	1.59	0.0724	11.28%	-56.87%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		1.59	1.43	1.56	1.42	1.18					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-8859-8275		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 066			13.23%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	5.51	1.86	0.121	8	CDF	2.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.92	2.29	0.3287	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.321485		0.321485		1	30.3	5.7E-04	Significant Effect			
Error	0.0848212		0.0106027		8						
Total	0.406306				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			13.4	23.2	0.0277	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.981	0.741	0.9703	Normal Distribution				
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	1.27	1.1	1.45		1.12	1.46	0.0628	11.03%	-39.17%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		1.46	1.17	1.37	1.25	1.12					

CETIS Analytical Report

Report Date: 14 Nov-17 13:33 (p 49 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-9657-3880		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 066			9.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.557	1.86	0.089	8	CDF	0.2963	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.34	2.29	0.0348	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0017956		0.0017956		1	0.311	0.5925	Non-Significant Effect			
Error	0.046236		0.0057795		8						
Total	0.0480316				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.84	23.2	0.0894	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.893	0.741	0.1837	Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.942	0.818	1.07		0.843	1.11	0.0449	10.66%	-2.93%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.94	0.901	1.11	0.843	0.917					

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Report Date: 14 Nov-17 13:33 (p 50 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3611-6407		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 087			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution				
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Report Date: 14 Nov-17 13:33 (p 51 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7834-9527		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 087				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-1900-5977		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed pcb 087				5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-9182-0322		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 087			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Report Date: 14 Nov-17 13:33 (p 54 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-3049-6531		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed pcb 087				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0106929		0.0106929		1	11.5	0.0095	Significant Effect		
Error		0.0074352		0.0009294		8					
Total		0.0181281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Report Date: 14 Nov-17 13:33 (p 55 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-0485-2257		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 087				7.85%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.23	1.86	0.072	8	CDF	0.1273	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.21	2.29	0.0830		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0056169		0.0056169		1	1.51	0.2547	Non-Significant Effect			
Error	0.029844		0.0037305		8						
Total	0.0354609				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.06	23.2	0.2037		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.879	0.741	0.1286		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.963	0.867	1.06		0.906	1.09	0.0346	8.04%	-5.18%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	1.09	0.983	0.921					

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Report Date: 14 Nov-17 13:33 (p 56 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-3902-9788		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed pcb 087			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-2970-8696		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed pcb 087			4.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-0648-4173		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed pcb 101				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-7762-8840		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 101			66.07%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	3.27	2.13	0.605	4	CDF	0.0154	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.13	2.29	0.1283		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.14832		2.14832		1	10.7	0.0114	Significant Effect			
Error	1.60958		0.201197		8						
Total	3.7579				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			272	23.2	8.0E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.851	0.741	0.0604		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	1.84	1.06	2.63		0.942	2.68	0.283	34.37%	-101.27%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		2.01	0.942	1.62	1.96	2.68					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6612-3814		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 101			27.24%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	8.79	2.13	0.249	4	CDF	4.6E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.97	2.29	0.2623		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.64504		2.64504		1	77.3	2.2E-05	Significant Effect			
Error	0.273621		0.0342027		8						
Total	2.91867				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			45.4	23.2	0.0028		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5175		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	1.94	1.62	2.27		1.6	2.23	0.116	13.31%	-112.37%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		1.8	2.23	1.93	2.16	1.6					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-1685-4348		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pcb 101			40.95%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	10	2.13	0.375	4	CDF	2.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.04	2.29	0.1992		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7.74928		7.74928		1	100	8.4E-06	Significant Effect			
Error	0.618421		0.0773026		8						
Total	8.3677				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			104	23.2	5.4E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.898	0.741	0.2080		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	2.68	2.19	3.16		2.38	3.21	0.175	14.62%	-192.33%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		2.38	2.98	2.39	3.21	2.42					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-0903-8644		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 failed pcb 101				31.61%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	13.5	2.13	0.289	4	CDF	8.6E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.86	2.29	0.4066	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	8.45113		8.45113		1	184	8.5E-07	Significant Effect			
Error	0.368421		0.0460527		8						
Total	8.81955				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				61.4	23.2	0.0015	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.958	0.741	0.7636	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	2.75	2.38	3.13		2.43	3.13	0.135	10.93%	-200.85%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		2.64	2.56	3.13	3.01	2.43					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-7077-2914		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pcb 101			53.14%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.52	2.29	0.0063	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	13.2319		13.2319		1	77.4	2.2E-05	Significant Effect			
Error	1.36842		0.171053		8						
Total	14.6003				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				231	23.2	1.1E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.765	0.741	0.0055	Non-Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	3.22	2.49	3.94		2.74	4.2	0.261	18.15%	-251.32%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		4.2	2.83	3.23	3.08	2.74					

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Report Date: 14 Nov-17 13:33 (p 64 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-5204-8366		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 101			31.49%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	10.2	2.13	0.288	4	CDF	2.6E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.13	2.29	0.1257	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4.79279		4.79279		1	105	7.1E-06	Significant Effect		
Error		0.365701		0.0457126		8					
Total		5.15849				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			61	23.2	0.0015	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.917	0.741	0.3308	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	2.3	1.93	2.67		1.87	2.54	0.134	13.04%	-151.26%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		2.54	2.47	2.52	1.87	2.1					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-1547-9736		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 101				46.30%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	7.77	2.35	0.424	3	CDF	0.0022	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4.35307		4.35307		1	77.8	4.9E-05	Significant Effect			
Error	0.391601		0.055943		7						
Total	4.74467				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				87.1	24.3	8.5E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.899	0.701	0.2437	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		4	2.32	1.74	2.89		1.95	2.78	0.179	15.49%	-152.89%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		2.14	2.39	Outlier	1.95	2.78					

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Report Date: 14 Nov-17 13:33 (p 66 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-0984-8163		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 105				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution				
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-1967-8768		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 105			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-9782-9917		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed pcb 105				5.95%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-4976-4389		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 105			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-1691-5781		Endpoint: PCB 105				CETIS Version: CETISv1.9.3					
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 105			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution				
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Report Date: 14 Nov-17 13:33 (p 71 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-6743-3737		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 105			32.03%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	2.18	2.13	0.293	4	CDF	0.0473	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.02	2.29	0.2128		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.225		0.225		1	4.76	0.0607	Non-Significant Effect			
Error	0.378292		0.0472865		8						
Total	0.603292				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			63.1	23.2	0.0014		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.904	0.741	0.2423		Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	1.22	0.837	1.59		0.906	1.63	0.136	25.10%	-32.77%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		1.32	0.906	1.63	1.3	0.921					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3850-4485		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed pcb 105			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-8509-7582		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 105			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect		
Error		0.0109944		0.0013743		8					
Total		0.0118044				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-8410-8833		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 118			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Report Date: 14 Nov-17 13:33 (p 75 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-0851-8724		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 118			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		5.760E-05	5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error		0.0138584	0.0017323		8						
Total		0.013916			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-7001-9350			Endpoint: PCB 118				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed pcb 118				5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-7717-0058		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 118			6.52%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.01	1.86	0.06	8	CDF	0.1711	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.13	2.29	0.1287	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	1.02	0.3421	Non-Significant Effect			
Error	0.020586		0.0025733		8						
Total	0.0232104				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.49	23.2	0.3988	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.9	0.741	0.2193	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.948	0.873	1.02		0.846	0.997	0.0271	6.39%	-3.54%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.968	0.942	0.997	0.986					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-2603-9870		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 118			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9395-2424		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pcb 118			15.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.63	1.86	0.138	8	CDF	8.5E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.07	2.29	0.1744		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.293437		0.293437		1	21.4	0.0017	Significant Effect			
Error	0.109581		0.0136977		8						
Total	0.403018				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			17.6	23.2	0.0168		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.878	0.741	0.1244		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	1.26	1.06	1.46		1.03	1.48	0.072	12.80%	-37.43%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		1.22	1.28	1.48	1.28	1.03					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-2067-9518		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 118				11.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	1.06	1.86	0.101	8	CDF	0.1597	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.43	2.29	0.0175		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0083521		0.0083521		1	1.13	0.3194	Non-Significant Effect			
Error	0.059272		0.007409		8						
Total	0.0676241				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			9.04	23.2	0.0555		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.85	0.741	0.0587		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.973	0.83	1.12		0.864	1.17	0.0517	11.87%	-6.31%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		1.17	0.864	0.951	0.947	0.934					

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Report Date: 14 Nov-17 13:33 (p 81 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-3834-0018		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed pcb 118				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Report Date: 14 Nov-17 13:33 (p 82 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-3086-4818		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 128				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-0541-6358		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 128			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-5938-4069		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 128			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-0419-2043		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 128			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.65	23.2	0.3674		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6289-3555		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 128				3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0106929		0.0106929		1	11.5	0.0095	Significant Effect		
Error		0.0074352		0.0009294		8					
Total		0.0181281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-7189-8105		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed pcb 128				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.28	23.2	0.4443	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9440	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-8038-7954		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed pcb 128				5.45%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-2368-8301		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 128			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Report Date: 14 Nov-17 13:33 (p 90 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-4530-2369		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 138			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-3453-4037		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 138				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-2206-8682		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 138			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-9554-1230		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 138			14.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.59	1.86	0.13	8	CDF	0.0747	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.86	2.29	0.4110	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0310249		0.0310249		1	2.54	0.1494	Non-Significant Effect			
Error	0.097586		0.0121982		8						
Total	0.128611				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				15.5	23.2	0.0211	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.981	0.741	0.9692	Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	1.03	0.839	1.21		0.846	1.22	0.0677	14.74%	-12.17%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	1.22	0.942	1.14	0.986					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-7358-6580		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 138				23.14%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	1.35	2.13	0.212	4	CDF	0.1238	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.69	2.29	0.7043	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0451584		0.0451584		1	1.83	0.2131	Non-Significant Effect		
Error		0.197408		0.024676		8					
Total		0.242566				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			32.5	23.2	0.0053	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4403	Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	1.05	0.778	1.32		0.843	1.3	0.0979	20.84%	-14.68%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.853	0.843	0.993	1.26	1.3					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-4509-5581		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pcb 138			19.70%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.63	2.29	0.0014	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.78337		1.78337		1	75.8	2.4E-05	Significant Effect		
Error		0.188101		0.0235127		8					
Total		1.97147				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			30.9	23.2	0.0058	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.72	0.741	0.0015	Non-Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	1.76	1.49	2.03		1.65	2.14	0.0954	12.13%	-92.27%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		1.65	1.66	2.14	1.65	1.7					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-1160-2788		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 138			11.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	6.07	1.86	0.101	8	CDF	1.5E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1115	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.269945		0.269945		1	36.8	3.0E-04	Significant Effect		
Error		0.0586212		0.0073277		8					
Total		0.328566				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			8.93	23.2	0.0567	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.936	0.741	0.5075	Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	1.24	1.1	1.39		1.07	1.38	0.0513	9.23%	-35.90%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		1.38	1.29	1.27	1.21	1.07					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-6723-2150		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 138			32.63%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.83	2.13	0.299	4	CDF	0.0704	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.58	2.29	0.9668	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.164866		0.164866		1	3.36	0.1041	Non-Significant Effect			
Error	0.39253		0.0490662		8						
Total	0.557396				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				65.5	23.2	0.0013	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.922	0.741	0.3746	Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	1.17	0.786	1.56		0.843	1.5	0.139	26.52%	-28.05%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		1.5	1.5	0.938	0.843	1.08					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-2105-8838		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 153			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-0124-0300		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Untransformed		C < T			29517-002 passed pcb 153					5.35%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-0204-3929		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 153			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Report Date: 14 Nov-17 13:34 (p 101 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-7535-8103		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pcb 153			12.66%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	1.92	1.86	0.116	8	CDF	0.0456	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.88	2.29	0.3704		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0357604		0.0357604		1	3.68	0.0912	Non-Significant Effect			
Error	0.0776452		0.0097057		8						
Total	0.113406				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			12.2	23.2	0.0329		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9450		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	1.04	0.869	1.2		0.897	1.21	0.0599	12.94%	-13.07%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.897	1.14	0.942	1.21	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-9757-3208		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 153				14.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.283	1.89	0.131	7	CDF	0.3925	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0008537		0.0008537		1	0.0803	0.7850	Non-Significant Effect			
Error	0.0743792		0.0106256		7						
Total	0.0752329				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				15.5	24.3	0.0230	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.829	0.701	0.0436	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		4	0.935	0.695	1.18		0.843	1.16	0.0755	16.16%	-2.14%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	1.16	Outlier	0.885					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-8584-6062		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pcb 153			10.87%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	9.51	1.86	0.1	8	CDF	6.2E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.96	2.29	0.2805		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.646685		0.646685		1	90.4	1.2E-05	Significant Effect			
Error	0.0572212		0.0071527		8						
Total	0.703906				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			8.7	23.2	0.0594		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9444		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	1.42	1.28	1.56		1.3	1.58	0.0507	7.95%	-55.56%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		1.58	1.3	1.34	1.49	1.41					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-5281-6886		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 153			27.08%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.54	2.13	0.248	4	CDF	0.0320	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.25	2.29	0.0668	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.218153		0.218153		1	6.45	0.0347	Significant Effect			
Error	0.270474		0.0338093		8						
Total	0.488627				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				44.8	23.2	0.0028	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.918	0.741	0.3396	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	1.21	0.891	1.53		0.934	1.6	0.115	21.24%	-32.27%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		1.32	1.6	1.1	1.1	0.934					

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Report Date: 14 Nov-17 13:34 (p 105 of 153)
 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-7209-8627		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 153			25.23%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.3	2.13	0.231	4	CDF	0.1323	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.01	2.29	0.2268	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0492804		0.0492804		1	1.68	0.2311	Non-Significant Effect			
Error	0.23471		0.0293388		8						
Total	0.28399				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				38.8	23.2	0.0037	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.946	0.741	0.6267	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	1.06	0.759	1.35		0.843	1.38	0.107	22.65%	-15.34%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	1.38	1.24	0.843	0.928					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-2501-9075		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 170			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution				
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Report Date: 14 Nov-17 13:34 (p 107 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-3352-8632		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed pcb 170			5.35%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-2937-2513		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 170			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect		
Error		0.0171864		0.0021483		8					
Total		0.0174465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-3555-4550		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed pcb 170				6.67%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-1907-9441		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed pcb 170				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9695-6323		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 170				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-9300-6327		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed pcb 170			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-3902-4391		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 170			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3703-3316		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed pcb 180				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-3485-5081		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed pcb 180				5.35%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-8012-5530		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 180			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect		
Error		0.0171864		0.0021483		8					
Total		0.0174465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-8925-5370		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed pcb 180				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution				
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-6402-5998		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 180			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-1513-3208		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed pcb 180			4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution				
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-7120-3478		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 180				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect		
Error		0.0144024		0.0018003		8					
Total		0.0157249				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-3907-5820		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed pcb 180				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-9836-8791		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed pcb 187				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-4836-2137		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 187				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-2123-4958		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 187			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect		
Error		0.0171864		0.0021483		8					
Total		0.0174465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

CETIS Analytical Report

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-5407-9303		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed pcb 187			6.67%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-2700-1510		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 187			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-2599-8611		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed pcb 187			4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-3725-2830		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 187				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-9305-4908		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed pcb 187				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution				
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-0081-8947		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:29		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 195			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution				
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-1729-6498		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed pcb 195			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-2131-4115		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed pcb 195				5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0002601	0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error		0.0171864	0.0021483		8						
Total		0.0174465			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-8286-1230		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed pcb 195			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-8950-6518		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed pcb 195			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9400-8386		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 195				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.28	23.2	0.4443		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-3983-7416		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 195				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-2466-2886		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed pcb 195			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-4652-5142		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 206			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-7381-9859		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 206				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-8397-2866		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pcb 206			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect		
Error		0.0171864		0.0021483		8					
Total		0.0174465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-0614-6581		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed pcb 206				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.65	23.2	0.3674		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-4544-5935		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed pcb 206				3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between		0.0106929	0.0106929	1	11.5	0.0095	Significant Effect				
Error		0.0074352	0.0009294	8							
Total		0.0181281		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-9064-4310		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 206				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution				
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-0679-3604		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 206				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-7762-4505		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)								
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed pcb 206			4.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.56	2.29	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.00081		0.00081	1	0.589	0.4647	Non-Significant Effect				
Error	0.0109944		0.0013743	8							
Total	0.0118044			9							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.16	23.2	0.8900		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.947	0.741	0.6346		Normal Distribution				
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-5245-6528		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 209			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953		0.846	0.952	0.0195	4.85%	1.81%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-0258-0581		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 209				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966		0.871	0.973	0.0199	4.90%	0.52%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7983-6093		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed pcb 209				5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect		
Error		0.0171864		0.0021483		8					
Total		0.0174465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992		0.847	0.992	0.0238	5.74%	-1.11%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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 Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-7881-8570		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed pcb 209				6.67%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.65	23.2	0.3674	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.913	0.741	0.3050	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976		0.846	0.986	0.028	6.96%	1.81%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-7488-8642		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed pcb 209				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874		0.836	0.883	0.00876	2.30%	7.14%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

CETIS Analytical Report

Report Date: 14 Nov-17 13:34 (p 151 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9352-2417		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:30		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed pcb 209				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution				
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941		0.868	0.936	0.0114	2.80%	0.70%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

CETIS Analytical Report

Report Date: 14 Nov-17 13:34 (p 152 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-9322-5661		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed pcb 209				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect		
Error		0.0144024		0.0018003		8					
Total		0.0157249				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95		0.84	0.947	0.0206	5.17%	2.51%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

CETIS Analytical Report

Report Date: 14 Nov-17 13:34 (p 153 of 153)
Test Code: 29524Mn-PCB | 09-8839-5661

Bioaccumulation Evaluation - PCB Congeners - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-7461-2719		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 13:31		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed pcb 209			4.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8900		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963		0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942		0.843	0.938	0.016	3.98%	1.97%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

28 day *Nereis virens*
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PCB Congeners

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PCB Congeners (ng/g wet wt.)										
PCB 8	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 18	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 28	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 44	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 52	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 66	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 87	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 101	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 105	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 118	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 128	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 138	0.438	U	0.499	J	0.507	J	0.793	J	0.805	J
PCB 153	0.534	J	0.594	J	0.972		1.12		1.14	
PCB 170	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 180	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 187	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 195	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 206	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
PCB 209	0.438	U	0.466	U	0.444	U	0.45	U	0.494	U
Total PCBs	16.84		18.03		18.05		19.13		20.69	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 1									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 18	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 28	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 44	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 52	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 66	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 87	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 101	0.474	U	0.457	U	0.486	U	0.476	U	0.784	J
PCB 105	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 118	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 128	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 138	0.72	J	0.54	J	0.732	J	0.795	J	1	
PCB 153	1.08		0.65	J	1.05		1.48		1.53	
PCB 170	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 180	0.474	U	0.457	U	0.486	U	0.632	J	0.745	J
PCB 187	0.474	U	0.457	U	0.486	U	0.541	J	0.669	J
PCB 195	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 206	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
PCB 209	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Total PCBs	19.72		17.92		20.09		21.18		22.67	

* = Qualifiers

U Analyte not detected; below Method Detection Limit

J Analyte estimated; detection below Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 18	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 28	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 44	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 52	0.971	U	0.919	U	0.858	J	0.976	U	0.871	U
PCB 66	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 87	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 101	0.971	U	0.919	U	0.842	U	0.976	U	1.04	J
PCB 105	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 118	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 128	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 138	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 153	0.971	U	0.919	U	0.914	J	0.976	U	1.05	J
PCB 170	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 180	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 187	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 195	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 206	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
PCB 209	0.971	U	0.919	U	0.842	U	0.976	U	0.871	U
Total PCBs	36.90		34.92		32.17		37.09		33.79	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 3									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 18	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 28	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 44	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 52	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 66	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 87	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 101	0.896	U	0.904	J	0.992	U	0.958	U	0.973	U
PCB 105	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 118	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 128	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 138	0.896	U	0.912	J	0.992	U	0.958	U	0.973	U
PCB 153	0.953	J	1.33	J	0.992	U	0.958	U	1.23	J
PCB 170	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 180	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 187	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 195	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 206	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
PCB 209	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
Total PCBs	34.16		34.26		37.70		36.40		37.49	

* = Qualifiers

U Analyte not detected; below Method Detection Limit

J Analyte estimated; detection below Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 18	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 28	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 44	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 52	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 66	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 87	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 101	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 105	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 118	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 128	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 138	0.956	U	1.06	J	0.868	U	1.15	J	0.922	U
PCB 153	1.23	J	1.42	J	0.868	U	1.48	J	0.922	U
PCB 170	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 180	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 187	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 195	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 206	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
PCB 209	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
Total PCBs	36.88		34.13		32.98		37.02		35.04	

* = Qualifiers

U Analyte not detected; below Method Detection Limit

J Analyte estimated; detection below Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 18	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 28	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 44	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 52	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 66	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 87	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 101	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 105	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 118	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 128	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 138	0.929	U	0.936	J	0.919	U	0.886	U	0.973	U
PCB 153	0.929	U	1.54	J	1.36	J	1.09	J	0.992	J
PCB 170	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 180	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 187	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 195	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 206	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
PCB 209	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
Total PCBs	35.30		36.78		35.80		34.08		37.01	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 6									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 18	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 28	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 44	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 52	2.2		1.51	J	2.66		1.85	J	2.04	
PCB 66	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 87	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 101	1.47	J	0.98	U	2.18		0.934	U	0.994	U
PCB 105	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 118	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 128	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 138	0.853	U	1.46	J	1.52	J	2.06		0.994	U
PCB 153	0.923	J	2.45		2.01		2.92		2.07	
PCB 170	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 180	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 187	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 195	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 206	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
PCB 209	0.853	U	0.98	U	0.976	U	0.934	U	0.994	U
Total PCBs	36.48		42.20		46.02		43.55		42.02	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 18	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 28	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 44	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 52	2.63		3.05		0.866	U	0.929	U	3.42	
PCB 66	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 87	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 101	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 105	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 118	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 128	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 138	1.99		1.05	J	1.16	J	1.79	J	1.16	J
PCB 153	2.43		2.23		1.87		2.42		1.98	
PCB 170	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 180	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 187	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 195	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 206	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
PCB 209	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
Total PCBs	44.63		42.07		35.50		40.01		43.01	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PCB Congeners (ng/g wet wt.)										
PCB 8	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 18	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 28	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 44	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 52	0.914	U	0.978	U	0.838	U	0.853	U	4.3	
PCB 66	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 87	0.914	U	2.29		0.838	U	0.853	U	0.883	U
PCB 101	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 105	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 118	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 128	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 138	0.914	U	1.44	J	1.34	J	1.27	J	1.84	
PCB 153	1.8	J	1.76	J	1.48	J	1.7	J	1.93	
PCB 170	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 180	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 187	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 195	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 206	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
PCB 209	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
Total PCBs	36.50		42.28		34.13		34.94		44.40	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below 100%

NA Not Analyzed

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:09 (p 1 of 2)

Test Code/ID: 19-2262-9629/29525Nv-PCB

Bioaccumulation Evaluation - PCB Congeners - Nereis																			EnviroSystems, Inc.		
Start Date: 31 Aug-17			Species: Nereis virens					Sample Code: 29525-000													
End Date: 28 Sep-17			Protocol: US ACE NED RIM (2004)					Sample Source: New Haven Harbor FNP -2017													
Sample Date: 31 Aug-17			Material: Laboratory Control Sediment					Sample Station: Laboratory Control - 29525													
Sample	Rep	Pos	PCB 008	PCB 018	PCB 028	PCB 044	PCB 052	PCB 066	PCB 101	PCB 105	PCB 118	PCB 128	PCB 138	PCB 153	PCB 170	PCB 180	PCB 187	PCB 195	PCB 206	PCB 209	PCB 087
29517-009	1	16	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.534	0.438	0.438	0.438	0.438	0.438	0.438	0.438
29517-009	2	28	0.466	0.466	0.466	0.466	0.466	0.466	0.466	0.466	0.466	0.466	0.499	0.594	0.466	0.466	0.466	0.466	0.466	0.466	0.466
29517-009	3	6	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.507	0.972	0.444	0.444	0.444	0.444	0.444	0.444	0.444
29517-009	4	45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.793	1.12	0.45	0.45	0.45	0.45	0.45	0.45	0.45
29517-009	5	26	0.494	0.494	0.494	0.494	0.494	0.494	0.494	0.494	0.494	0.494	0.805	1.14	0.494	0.494	0.494	0.494	0.494	0.494	0.494
29517-001	1	12	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.72	1.08	0.474	0.474	0.474	0.474	0.474	0.474	0.474
29517-001	2	42	0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.54	0.65	0.457	0.457	0.457	0.457	0.457	0.457	0.457
29517-001	3	3	0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.732	1.05	0.486	0.486	0.486	0.486	0.486	0.486	0.486
29517-001	4	24	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.795	1.48	0.476	0.632	0.541	0.476	0.476	0.476	0.476
29517-001	5	20	0.472	0.472	0.472	0.472	0.472	0.472	0.784	0.472	0.472	0.472	1	1.53	0.472	0.745	0.669	0.472	0.472	0.472	0.472
29517-002	1	5	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
29517-002	2	23	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919
29517-002	3	13	0.842	0.842	0.842	0.842	0.858	0.842	0.842	0.842	0.842	0.842	0.842	0.914	0.842	0.842	0.842	0.842	0.842	0.842	0.842
29517-002	4	29	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
29517-002	5	7	0.871	0.871	0.871	0.871	0.871	0.871	1.04	0.871	0.871	0.871	0.871	1.05	0.871	0.871	0.871	0.871	0.871	0.871	0.871
29517-003	1	30	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.953	0.896	0.896	0.896	0.896	0.896	0.896	0.896
29517-003	2	33	0.874	0.874	0.874	0.874	0.874	0.874	0.904	0.874	0.874	0.874	0.912	1.33	0.874	0.874	0.874	0.874	0.874	0.874	0.874
29517-003	3	25	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
29517-003	4	44	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958
29517-003	5	2	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	1.23	0.973	0.973	0.973	0.973	0.973	0.973	0.973
29517-004	1	21	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	1.23	0.956	0.956	0.956	0.956	0.956	0.956	0.956
29517-004	2	8	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	1.06	1.42	0.858	0.858	0.858	0.858	0.858	0.858	0.858
29517-004	3	10	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868	0.868
29517-004	4	9	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	0.934	1.15	1.48	0.934	0.934	0.934	0.934	0.934	0.934	0.934
29517-004	5	36	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
29517-005	1	4	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
29517-005	2	32	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	1.54	0.936	0.936	0.936	0.936	0.936	0.936	0.936
29517-005	3	1	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	1.36	0.919	0.919	0.919	0.919	0.919	0.919	0.919
29517-005	4	34	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	1.09	0.886	0.886	0.886	0.886	0.886	0.886	0.886
29517-005	5	38	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.992	0.973	0.973	0.973	0.973	0.973	0.973	0.973
29517-006	1	41	0.853	0.853	0.853	0.853	2.2	0.853	1.47	0.853	0.853	0.853	0.853	0.923	0.853	0.853	0.853	0.853	0.853	0.853	0.853
29517-006	2	19	0.98	0.98	0.98	0.98	1.51	0.98	0.98	0.98	0.98	0.98	1.46	2.45	0.98	0.98	0.98	0.98	0.98	0.98	0.98

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:09 (p 2 of 2)

Test Code/ID: 19-2262-9629/29525Nv-PCB

Sample	Rep	Pos	PCB 008	PCB 018	PCB 028	PCB 044	PCB 052	PCB 066	PCB 101	PCB 105	PCB 118	PCB 128	PCB 138	PCB 153	PCB 170	PCB 180	PCB 187	PCB 195	PCB 206	PCB 209	PCB 087
29517-006	3	37	0.976	0.976	0.976	0.976	2.66	0.976	2.18	0.976	0.976	0.976	1.52	2.01	0.976	0.976	0.976	0.976	0.976	0.976	0.976
29517-006	4	15	0.934	0.934	0.934	0.934	1.85	0.934	0.934	0.934	0.934	0.934	2.06	2.92	0.934	0.934	0.934	0.934	0.934	0.934	0.934
29517-006	5	31	0.994	0.994	0.994	0.994	2.04	0.994	0.994	0.994	0.994	0.994	0.994	2.07	0.994	0.994	0.994	0.994	0.994	0.994	0.994
59517-007	1	43	0.954	0.954	0.954	0.954	2.63	0.954	0.954	0.954	0.954	0.954	1.99	2.43	0.954	0.954	0.954	0.954	0.954	0.954	0.954
59517-007	2	14	0.919	0.919	0.919	0.919	3.05	0.919	0.919	0.919	0.919	0.919	1.05	2.23	0.919	0.919	0.919	0.919	0.919	0.919	0.919
59517-007	3	35	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	1.16	1.87	0.866	0.866	0.866	0.866	0.866	0.866	0.866
59517-007	4	27	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	1.79	2.42	0.929	0.929	0.929	0.929	0.929	0.929	0.929
59517-007	5	11	0.934	0.934	0.934	0.934	3.42	0.934	0.934	0.934	0.934	0.934	1.16	1.98	0.934	0.934	0.934	0.934	0.934	0.934	0.934
29517-008	1	22	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	1.8	0.914	0.914	0.914	0.914	0.914	0.914	0.914
29517-008	2	18	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	1.44	1.76	0.978	0.978	0.978	0.978	0.978	0.978	2.29
29517-008	3	17	0.838	0.838	0.838	0.838	0.838	0.838	0.838	0.838	0.838	0.838	1.34	1.48	0.838	0.838	0.838	0.838	0.838	0.838	0.838
29517-008	4	40	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	1.27	1.7	0.853	0.853	0.853	0.853	0.853	0.853	0.853
29517-008	5	39	0.883	0.883	0.883	0.883	4.3	0.883	0.883	0.883	0.883	0.883	1.84	1.93	0.883	0.883	0.883	0.883	0.883	0.883	0.883

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 1 of 14)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
Batch ID:	01-0630-5849	Test Type:	Bioaccumulation - PCBs - Nv	Analyst:	Nancy Roka	
Start Date:	31 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	28 Sep-17	Species:	Nereis virens	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
16-0613-5518	PCB 008	Equal Variance t Two-Sample Test	0.1120	29517-001	passed	pcb 008
17-6756-8372	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-002	failed	pcb 008
17-0597-0935	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-003	failed	pcb 008
05-1613-4403	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-004	failed	pcb 008
18-7611-5594	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-005	failed	pcb 008
02-1119-5619	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 008
16-5771-1532	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 008
19-5950-2937	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	59517-007	failed	pcb 008
01-0556-5395	PCB 008	Equal Variance t Two-Sample Test	<1.0E-37	29517-008	failed	pcb 008
16-9209-4513	PCB 018	Equal Variance t Two-Sample Test	0.1120	29517-001	passed	pcb 018
01-0522-2078	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-002	failed	pcb 018
10-9337-3645	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-003	failed	pcb 018
15-5941-7832	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-004	failed	pcb 018
15-6957-9169	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-005	failed	pcb 018
04-4399-2392	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 018
08-6271-5865	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 018
14-7374-8668	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	59517-007	failed	pcb 018
18-3056-7282	PCB 018	Equal Variance t Two-Sample Test	<1.0E-37	29517-008	failed	pcb 018
03-5749-0591	PCB 028	Equal Variance t Two-Sample Test	0.1120	29517-001	passed	pcb 028
11-5530-2642	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-002	failed	pcb 028
15-8036-5041	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-003	failed	pcb 028
07-2244-5223	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-004	failed	pcb 028
21-4451-6002	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-005	failed	pcb 028
02-2196-1948	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 028
06-1125-8769	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-006	failed	pcb 028
13-6128-0494	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	59517-007	failed	pcb 028
15-9122-9598	PCB 028	Equal Variance t Two-Sample Test	<1.0E-37	29517-008	failed	pcb 028

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Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
14-8454-7852	PCB 044	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 044
06-0268-4534	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 044
16-7893-4926	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 044
08-0851-1884	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 044
07-8430-8697	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 044
03-6764-0006	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 044
20-9217-7209	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 044
03-2007-0178	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 044
04-4758-3958	PCB 044	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 044
07-9901-6205	PCB 052	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 052
02-4852-8844	PCB 052	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 052
03-6384-3535	PCB 052	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 052
10-8956-0999	PCB 052	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 052
03-9520-7809	PCB 052	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 052
01-0560-7466	PCB 052	Unequal Variance t Two-Sample Test	5.6E-04	29517-006 failed pcb 052
03-8792-3988	PCB 052	Unequal Variance t Two-Sample Test	0.0165	59517-007 failed pcb 052
18-6520-8046	PCB 052	Equal Variance t Two-Sample Test	9.1E-07	29517-008 failed pcb 052
09-1297-1642	PCB 052	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-008 failed pcb 052
02-8191-5524	PCB 066	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 066
10-3013-0798	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 066
20-6760-7430	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 066
21-4141-2879	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 066
18-9002-0716	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 066
00-4885-4498	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 066
06-4012-6978	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 066
12-5670-6647	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 066
17-0040-7233	PCB 066	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 066
01-3247-8687	PCB 087	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 087
13-4190-6599	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 087
02-3005-9631	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 087
21-1628-0423	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 087
01-1645-3432	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 087
01-0917-7673	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 087
12-0119-5650	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 087
06-4035-4079	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 087
02-9800-7996	PCB 087	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 087
10-0344-3515	PCB 087	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-008 failed pcb 087
05-2378-8552	PCB 101	Equal Variance t Two-Sample Test	0.1378	29517-001 passed pcb 101
07-8866-1829	PCB 101	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-001 passed pcb 101
00-2527-2583	PCB 101	Equal Variance t Two-Sample Test	2.9E-07	29517-002 failed pcb 101
07-8618-1712	PCB 101	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 101
18-5908-9095	PCB 101	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 101
20-1138-6335	PCB 101	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 101
10-7005-4620	PCB 101	Unequal Variance t Two-Sample Test	0.0075	29517-006 failed pcb 101
10-8314-4340	PCB 101	Unequal Variance t Two-Sample Test	0.0116	29517-006 failed pcb 101
16-1052-1194	PCB 101	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 101
06-9948-0141	PCB 101	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 101
16-4034-4707	PCB 105	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 105
01-9206-5359	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 105
11-3035-6733	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 105
07-6266-9869	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 105
03-8786-8636	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 105
07-8450-8169	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 105

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Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
17-3990-1349	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 105
09-6006-0834	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 105
08-0632-2137	PCB 105	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 105
04-8716-1906	PCB 118	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 118
16-4088-3116	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 118
11-9195-8724	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 118
15-4313-3167	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 118
13-6133-2160	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 118
17-5776-6118	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 118
19-0429-0128	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 118
10-1236-7275	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 118
06-3033-6151	PCB 118	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 118
02-5737-0298	PCB 128	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 128
15-4775-9778	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 128
19-6207-1702	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 128
01-3434-6142	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 128
11-4900-6926	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 128
08-0886-4387	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 128
15-8506-1169	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 128
00-5778-4654	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 128
17-9677-3299	PCB 128	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 128
04-9740-9851	PCB 138	Equal Variance t Two-Sample Test	0.1027	29517-001 passed pcb 138
13-1277-2004	PCB 138	Equal Variance t Two-Sample Test	0.0030	29517-002 failed pcb 138
12-3099-0959	PCB 138	Equal Variance t Two-Sample Test	0.0015	29517-003 failed pcb 138
15-8529-4262	PCB 138	Equal Variance t Two-Sample Test	0.0017	29517-004 failed pcb 138
20-5581-0318	PCB 138	Unequal Variance t Two-Sample Test	0.0080	29517-005 failed pcb 138
04-4799-9024	PCB 138	Equal Variance t Two-Sample Test	0.0049	29517-006 failed pcb 138
13-6069-1449	PCB 138	Equal Variance t Two-Sample Test	0.0021	59517-007 failed pcb 138
00-4287-6676	PCB 138	Equal Variance t Two-Sample Test	0.0011	29517-008 failed pcb 138
01-8998-8966	PCB 153	Equal Variance t Two-Sample Test	0.1017	29517-001 passed pcb 153
07-2235-8129	PCB 153	Unequal Variance t Two-Sample Test	0.2574	29517-002 passed pcb 153
13-3207-5425	PCB 153	Equal Variance t Two-Sample Test	0.0915	29517-003 passed pcb 153
07-6705-5152	PCB 153	Equal Variance t Two-Sample Test	0.0607	29517-004 passed pcb 153
10-0517-3846	PCB 153	Equal Variance t Two-Sample Test	0.0560	29517-005 passed pcb 153
00-2910-6203	PCB 153	Equal Variance t Two-Sample Test	0.0048	29517-006 failed pcb 153
18-1427-6420	PCB 153	Equal Variance t Two-Sample Test	3.1E-05	59517-007 failed pcb 153
11-7231-0027	PCB 153	Equal Variance t Two-Sample Test	2.1E-04	29517-008 failed pcb 153
00-8994-8619	PCB 170	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 170
17-2177-9764	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 170
10-1126-7395	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 170
13-2392-1960	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 170
09-1385-1641	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 170
03-3443-9892	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 170
06-4372-1164	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 170
07-4615-9026	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 170
00-2593-1113	PCB 170	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 170
09-2659-7674	PCB 180	Unequal Variance t Two-Sample Test	0.0764	29517-001 passed pcb 180
09-5619-8563	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 180
16-1535-3322	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 180
20-0223-4935	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 180
05-9388-4155	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 180
11-4608-1877	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 180
18-7881-8337	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 180

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Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
04-4180-2119	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 180
05-5753-4171	PCB 180	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 180
02-4111-8704	PCB 187	Equal Variance t Two-Sample Test	0.0656	29517-001 passed pcb 187
09-4640-3444	PCB 187	Equal Variance t Two-Sample Test	0.0784	29517-001 passed pcb 187
00-8255-1260	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 187
09-4984-4694	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 187
01-3314-7699	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 187
15-3686-9127	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 187
09-4508-7521	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 187
17-1949-8779	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 187
16-5677-7992	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 187
05-0248-1773	PCB 187	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 187
06-5208-0328	PCB 195	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 195
06-2640-5689	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 195
01-0733-5200	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 195
06-9628-9360	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 195
17-8118-0209	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 195
02-3589-3159	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 195
18-7439-2630	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 195
08-3386-4409	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 195
03-8039-1021	PCB 195	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 195
08-1274-7560	PCB 206	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 206
08-0212-3041	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 206
14-3345-2953	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 206
04-9630-7087	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 206
03-6799-8162	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 206
00-8148-4772	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 206
01-8490-4117	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 206
21-2024-2215	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 206
08-8974-1994	PCB 206	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 206
15-4246-0456	PCB 209	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pcb 209
10-1786-4127	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pcb 209
10-6439-3323	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pcb 209
00-6485-7848	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed pcb 209
04-7436-9949	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pcb 209
02-8785-8597	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 209
13-4169-0123	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed pcb 209
14-8272-5796	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed pcb 209
10-2243-3903	PCB 209	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pcb 209

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PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%

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Bioaccumulation Evaluation - PCB Congeners - Nereis											EnviroSystems, Inc.
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.919	0.851	0.987	0.858	0.976	0.0245	0.0547	5.95%	-100.48%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	2.05	1.52	2.58	1.51	2.66	0.191	0.426	20.77%	-347.64%
59517-007		5	2.18	0.685	3.67	0.866	3.42	0.538	1.2	55.21%	-375.35%
29517-008		5	1.58	-0.315	3.47	0.838	4.3	0.681	1.52	96.63%	-243.94%
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	1.16	0.367	1.94	0.838	2.29	0.284	0.635	54.93%	-152.09%
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.535	0.362	0.708	0.457	0.784	0.0623	0.139	26.03%	-16.80%
29517-002		5	0.95	0.858	1.04	0.842	1.04	0.033	0.0739	7.78%	-107.16%
29517-003		5	0.945	0.892	0.997	0.896	0.992	0.019	0.0426	4.50%	-106.06%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	1.31	0.651	1.97	0.934	2.18	0.238	0.532	40.57%	-186.13%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%

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Bioaccumulation Evaluation - PCB Congeners - Nereis											EnviroSystems, Inc.
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.438	0.805	0.0787	0.176	28.94%	0.00%
29517-001		5	0.757	0.552	0.963	0.54	1	0.074	0.166	21.85%	-24.49%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-50.53%
29517-003		5	0.946	0.896	0.997	0.896	0.992	0.0182	0.0408	4.31%	-55.52%
29517-004		5	0.991	0.851	1.13	0.868	1.15	0.0506	0.113	11.41%	-62.92%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-52.63%
29517-006		5	1.38	0.784	1.97	0.853	2.06	0.214	0.478	34.72%	-126.40%
59517-007		5	1.43	0.898	1.96	1.05	1.99	0.191	0.428	29.94%	-135.04%
29517-008		5	1.36	0.947	1.77	0.914	1.84	0.149	0.333	24.49%	-123.67%

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Bioaccumulation Evaluation - PCB Congeners - Nereis											EnviroSystems, Inc.
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.534	1.14	0.129	0.289	33.18%	0.00%
29517-001		5	1.16	0.711	1.6	0.65	1.53	0.161	0.36	31.07%	-32.80%
29517-002		5	0.966	0.898	1.03	0.914	1.05	0.0246	0.055	5.69%	-10.78%
29517-003		5	1.09	0.875	1.31	0.953	1.33	0.0784	0.175	16.05%	-25.30%
29517-004		5	1.18	0.836	1.53	0.868	1.48	0.125	0.28	23.66%	-35.78%
29517-005		5	1.18	0.861	1.5	0.929	1.54	0.116	0.259	21.91%	-35.57%
29517-006		5	2.07	1.16	2.99	0.923	2.92	0.331	0.739	35.63%	-137.91%
59517-007		5	2.19	1.87	2.5	1.87	2.43	0.114	0.254	11.63%	-150.69%
29517-008		5	1.73	1.53	1.94	1.48	1.93	0.0739	0.165	9.53%	-98.85%
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.559	0.403	0.714	0.457	0.745	0.0561	0.125	22.44%	-21.90%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.525	0.418	0.632	0.457	0.669	0.0386	0.0862	16.41%	-14.62%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%

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Bioaccumulation Evaluation - PCB Congeners - Nereis											EnviroSystems, Inc.
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	-99.78%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-104.76%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	-97.99%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-102.57%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-106.68%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-100.79%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	-94.85%

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 10 of 14)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
PCB 008 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 018 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 028 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 044 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 11 of 14)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
PCB 052 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.858	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		2.2	1.51	2.66	1.85	2.04
59517-007		2.63	3.05	0.866	0.929	3.42
29517-008		0.914	0.978	0.838	0.853	4.3
PCB 066 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 087 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	2.29	0.838	0.853	0.883
PCB 101 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.784
29517-002		0.971	0.919	0.842	0.976	1.04
29517-003		0.896	0.904	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		1.47	0.98	2.18	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 12 of 14)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
PCB 105 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 118 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 128 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 138 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.499	0.507	0.793	0.805
29517-001		0.72	0.54	0.732	0.795	1
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.912	0.992	0.958	0.973
29517-004		0.956	1.06	0.868	1.15	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	1.46	1.52	2.06	0.994
59517-007		1.99	1.05	1.16	1.79	1.16
29517-008		0.914	1.44	1.34	1.27	1.84

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 13 of 14)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
PCB 153 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.534	0.594	0.972	1.12	1.14
29517-001		1.08	0.65	1.05	1.48	1.53
29517-002		0.971	0.919	0.914	0.976	1.05
29517-003		0.953	1.33	0.992	0.958	1.23
29517-004		1.23	1.42	0.868	1.48	0.922
29517-005		0.929	1.54	1.36	1.09	0.992
29517-006		0.923	2.45	2.01	2.92	2.07
59517-007		2.43	2.23	1.87	2.42	1.98
29517-008		1.8	1.76	1.48	1.7	1.93
PCB 170 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 180 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.632	0.745
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 187 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.541	0.669
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883

CETIS Summary Report

Report Date: 29 Nov-17 10:47 (p 14 of 14)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis						EnviroSystems, Inc.
PCB 195 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 206 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
PCB 209 Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883

CETIS Analytical Report

Report Date: 29 Nov-17 10:43 (p 1 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-0613-5518		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 008				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

CETIS Analytical Report

Report Date: 29 Nov-17 10:43 (p 2 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-6756-8372		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 008			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-0597-0935		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 008				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Report Date: 29 Nov-17 10:43 (p 4 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-1613-4403		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 008			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-7611-5594		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 008			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-5771-1532		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 008			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-5950-2937		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 008				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0556-5395		Endpoint: PCB 008					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 008				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 008 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 008 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-9209-4513		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 018				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0522-2078		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 018			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-9337-3645		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 018				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

CETIS Analytical Report

Report Date: 29 Nov-17 10:43 (p 12 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-5941-7832		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 018			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.504452		0.504452		1	434	<1.0E-37	Significant Effect		
Error		0.0092944		0.0011618		8					
Total		0.513746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Report Date: 29 Nov-17 10:43 (p 13 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6957-9169		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 018			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-6271-5865		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 018			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-7374-8668		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 018				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Report Date: 29 Nov-17 10:43 (p 16 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-3056-7282		Endpoint: PCB 018					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 018				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 018 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 018 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-5749-0591		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 028			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Report Date: 29 Nov-17 10:43 (p 18 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5530-2642		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed pcb 028			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.523037		0.523037		1	259	2.2E-07	Significant Effect		
Error		0.016154		0.0020193		8					
Total		0.539191				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7	23.2	0.0859	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8556	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Report Date: 29 Nov-17 10:43 (p 19 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-8036-5041		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 028			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2244-5223		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed pcb 028				8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-4451-6002		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed pcb 028				7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-2196-1948		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pcb 028				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-1125-8769		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 028			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-6128-0494		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 028				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-9122-9598		Endpoint: PCB 028					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 028			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 028 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 028 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-8454-7852		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 044			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution				
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-0268-4534		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed pcb 044			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-7893-4926		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed pcb 044			10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Report Date: 29 Nov-17 10:44 (p 29 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-0851-1884		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 044			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Report Date: 29 Nov-17 10:44 (p 30 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8430-8697		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 044			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.73	2.29	0.6296		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.95	23.2	0.5343		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.957	0.741	0.7561		Normal Distribution				
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Report Date: 29 Nov-17 10:44 (p 31 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-6764-0006		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 044			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Report Date: 29 Nov-17 10:44 (p 32 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-2007-0178		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 044				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4758-3958		Endpoint: PCB 044					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 044			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 044 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 044 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-9901-6205		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 052			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Report Date: 29 Nov-17 10:44 (p 35 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-4852-8844		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 052				10.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	17.4	1.86	0.049	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.55	2.29	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.530381		0.530381		1	303	1.2E-07	Significant Effect			
Error	0.0139972		0.0017497		8						
Total	0.544378				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		5.93	23.2	0.1129		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.955	0.741	0.7316		Normal Distribution				
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.919	0.851	0.987	0.919	0.858	0.976	0.0245	5.95%	-100.48%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.858	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-6384-3535		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 052			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-8956-0999		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 052			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.54	2.29	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		3.6	23.2	0.2422		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.975	0.741	0.9294		Normal Distribution				
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-9520-7809		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 052			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0560-7466		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pcb 052				88.75%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	8.35	2.13	0.407	4	CDF	5.6E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.14	2.29	0.1230	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		6.3489		6.3489		1	69.7	3.2E-05	Significant Effect		
Error		0.728299		0.0910374		8					
Total		7.0772				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			360	23.2	4.6E-05	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.856	0.741	0.0692	Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	2.05	1.52	2.58	2.04	1.51	2.66	0.191	20.77%	-347.64%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		2.2	1.51	2.66	1.85	2.04					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-8792-3988		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 052				250.24%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	3.2	2.13	1.15	4	CDF	0.0165	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8195		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7.40116		7.40116		1	10.2	0.0127	Significant Effect			
Error	5.79061		0.723826		8						
Total	13.1918				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2870	23.2	7.3E-07		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.891	0.741	0.1719		Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	2.18	0.685	3.67	2.63	0.866	3.42	0.538	55.21%	-375.35%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		2.63	3.05	0.866	0.929	3.42					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1297-1642		Endpoint: PCB 052					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed pcb 052			276.41%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.68	2.29	4.6E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.12593		3.12593		1	2.69	0.1394	Non-Significant Effect			
Error	9.28542		1.16068		8						
Total	12.4113				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4600	23.2	2.8E-07	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.648	0.741	2.1E-04	Non-Normal Distribution			
PCB 052 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	1.58	-0.315	3.47	0.914	0.838	4.3	0.681	96.63%	-243.94%
PCB 052 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	4.3					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-8191-5524		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 066				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-3013-0798		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 066			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-6760-7430		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 066			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.57648		0.57648		1	371	<1.0E-37	Significant Effect		
Error		0.0124184		0.0015523		8					
Total		0.588899				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-4141-2879		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed pcb 066				8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-9002-0716		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 066			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-4012-6978		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pcb 066				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.597803		0.597803		1	315	<1.0E-37	Significant Effect			
Error	0.0151624		0.0018953		8						
Total	0.612965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-5670-6647		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 066			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-0040-7233		Endpoint: PCB 066					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 066				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 066 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 066 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-3247-8687		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 087				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-4190-6599		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 087				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-3005-9631		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 087			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-1628-0423		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 087			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1645-3432		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 087			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-0119-5650		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 087			11.17%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0917-7673		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 087			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-4035-4079		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 087				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-9800-7996		Endpoint: PCB 087					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 087				7.72%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	22.2	1.89	0.035	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.380144		0.380144		1	491	<1.0E-37	Significant Effect			
Error	0.0054212		0.0007745		7						
Total	0.385566				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.25	24.3	0.4503	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.928	0.701	0.4643	Normal Distribution			
PCB 087 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		4	0.872	0.818	0.926	0.868	0.838	0.914	0.0168	3.86%	-90.23%
PCB 087 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	Outlier	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8866-1829		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 101			25.61%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.64	2.29	0.0011		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0148225		0.0148225		1	1.49	0.2573	Non-Significant Effect			
Error	0.0797064		0.0099633		8						
Total	0.0945289				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			38.5	23.2	0.0038		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.718	0.741	0.0014		Non-Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.535	0.362	0.708	0.476	0.457	0.784	0.0623	26.03%	-16.80%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.784					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2527-2583		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 101			14.01%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	14.2	1.86	0.064	8	CDF	2.9E-07	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.09	2.29	0.1560		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.603194		0.603194		1	202	5.8E-07	Significant Effect			
Error	0.0238604		0.0029826		8						
Total	0.627054				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			10.8	23.2	0.0405		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.949	0.741	0.6514		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.95	0.858	1.04	0.971	0.842	1.04	0.033	7.78%	-107.16%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	1.04					

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Report Date: 29 Nov-17 10:44 (p 61 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8618-1712		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 101				8.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	22.6	1.86	0.04	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.51	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.590976		0.590976		1	510	<1.0E-37	Significant Effect			
Error	0.0092624		0.0011578		8						
Total	0.600239				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.59	23.2	0.2437		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.967	0.741	0.8657		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.945	0.892	0.997	0.958	0.896	0.992	0.019	4.50%	-106.06%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.904	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-5908-9095		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pcb 101			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-1138-6335		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 101			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7005-4620		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 101			64.80%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	5.04	2.35	0.297	3	CDF	0.0075	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.899163		0.899163		1		32.8	7.2E-04	Significant Effect		
Error	0.19199		0.0274272		7						
Total	1.09115				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				125	24.3	4.1E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.779	0.701	0.0118	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	1.09	0.694	1.49	0.987	0.934	1.47	0.126	22.99%	-138.77%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		1.47	0.98	Outlier	0.934	0.994					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-1052-1194		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 101			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1922	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.53361		0.53361		1	670	<1.0E-37	Significant Effect		
Error		0.0063684		0.0007961		8					
Total		0.539978				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.15	23.2	0.4757	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.952	0.741	0.6879	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-9948-0141		Endpoint: PCB 101					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed pcb 101			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.14	23.2	0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.948	0.741	0.6414	Normal Distribution			
PCB 101 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 101 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-4034-4707		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 105				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-9206-5359		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 105				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-3035-6733		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 105			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.57648		0.57648		1	371	<1.0E-37	Significant Effect		
Error		0.0124184		0.0015523		8					
Total		0.588899				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-6266-9869		Endpoint: PCB 105				CETIS Version: CETISv1.9.3					
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 105			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.504452		0.504452		1	434	<1.0E-37	Significant Effect		
Error		0.0092944		0.0011618		8					
Total		0.513746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-8786-8636		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 105			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.73	2.29	0.6296	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.55272		0.55272		1	743	<1.0E-37	Significant Effect		
Error		0.0059524		0.0007441		8					
Total		0.558673				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.95	23.2	0.5343	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7561	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8450-8169		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 105			11.17%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-6006-0834		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 105			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-0632-2137		Endpoint: PCB 105					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 105			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 105 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 105 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-8716-1906		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed pcb 118				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-4088-3116		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 118			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.74	2.29	0.6000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		7	23.2	0.0859		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.966	0.741	0.8556		Normal Distribution				
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-9195-8724		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 118				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Report Date: 29 Nov-17 10:45 (p 78 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-4313-3167		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed pcb 118				8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

CETIS Analytical Report

Report Date: 29 Nov-17 10:45 (p 79 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-6133-2160		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 118			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-5776-6118		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pcb 118				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-0429-0128		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 118			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-1236-7275		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 118			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-3033-6151		Endpoint: PCB 118					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 118			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 118 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 118 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-5737-0298		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 128			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-4775-9778		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 128				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-6207-1702		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 128				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-3434-6142		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 128			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-4900-6926		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed pcb 128				7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-8506-1169		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 128			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-5778-4654		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 128				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-9677-3299		Endpoint: PCB 128					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 128			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 128 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 128 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-9740-9851		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 138				33.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.38	1.86	0.201	8	CDF	0.1027	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.51	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0555025		0.0555025		1	1.9	0.2053	Non-Significant Effect			
Error	0.23359		0.0291988		8						
Total	0.289093				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.13	23.2	0.9074		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.926	0.741	0.4143		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-001		5	0.757	0.552	0.963	0.732	0.54	1	0.074	21.85%	-24.49%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-001		0.72	0.54	0.732	0.795	1					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-1277-2004		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 138			25.40%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	3.7	1.86	0.155	8	CDF	0.0030	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9401		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.236237		0.236237		1	13.7	0.0061	Significant Effect			
Error	0.13815		0.0172687		8						
Total	0.374387				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			8.77	23.2	0.0585		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.936	0.741	0.5138		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-50.53%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-3099-0959		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed pcb 138			24.70%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	4.18	1.86	0.15	8	CDF	0.0015	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.63	2.29	0.8316		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.285272		0.285272		1	17.5	0.0031	Significant Effect			
Error	0.13066		0.0163325		8						
Total	0.415932				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			18.7	23.2	0.0150		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.938	0.741	0.5332		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-003		5	0.946	0.896	0.997	0.958	0.896	0.992	0.0182	4.31%	-55.52%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-003		0.896	0.912	0.992	0.958	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-8529-4262		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 138			28.60%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	4.09	1.86	0.174	8	CDF	0.0017	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.41	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.36634		0.36634		1	16.7	0.0035	Significant Effect			
Error	0.175172		0.0218965		8						
Total	0.541512				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.42	23.2	0.4121		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1150		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-004		5	0.991	0.851	1.13	0.956	0.868	1.15	0.0506	11.41%	-62.92%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-004		0.956	1.06	0.868	1.15	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-5581-0318		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 138			28.03%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	4	2.13	0.171	4	CDF	0.0080	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.25632		0.25632		1	16	0.0039	Significant Effect			
Error	0.127948		0.0159935		8						
Total	0.384268				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			31.5	23.2	0.0056		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4538		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-52.63%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4799-9024		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 138			69.67%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	3.37	1.86	0.424	8	CDF	0.0049	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.01	2.29	0.2255	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.4784		1.4784		1	11.4	0.0097	Significant Effect			
Error	1.03911		0.129888		8						
Total	2.51751				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.38	23.2	0.0787	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.958	0.741	0.7620	Normal Distribution				
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-006		5	1.38	0.784	1.97	1.46	0.853	2.06	0.214	34.72%	-126.40%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-006		0.853	1.46	1.52	2.06	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-6069-1449		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 138			63.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	3.97	1.86	0.385	8	CDF	0.0021	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.81	2.29	0.4740		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.68757		1.68757		1	15.7	0.0041	Significant Effect			
Error	0.857415		0.107177		8						
Total	2.54498				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.91	23.2	0.1134		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.925	0.741	0.3987		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
59517-007		5	1.43	0.898	1.96	1.16	1.05	1.99	0.191	29.94%	-135.04%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
59517-007		1.99	1.05	1.16	1.79	1.16					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-4287-6676		Endpoint: PCB 138					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 138			51.52%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	4.46	1.86	0.313	8	CDF	0.0011	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3400		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.41526		1.41526		1	19.9	0.0021	Significant Effect			
Error	0.568228		0.0710285		8						
Total	1.98349				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.58	23.2	0.2442		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.964	0.741	0.8269		Normal Distribution			
PCB 138 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.608	0.39	0.827	0.507	0.438	0.805	0.0787	28.94%	0.00%
29517-008		5	1.36	0.947	1.77	1.34	0.914	1.84	0.149	24.49%	-123.67%
PCB 138 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.499	0.507	0.793	0.805					
29517-008		0.914	1.44	1.34	1.27	1.84					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-8998-8966		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 153				44.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.39	1.86	0.384	8	CDF	0.1017	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7889	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.20449		0.20449		1	1.92	0.2034	Non-Significant Effect			
Error	0.852736		0.106592		8						
Total	1.05723				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.55	23.2	0.6830	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.929	0.741	0.4345	Normal Distribution				
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-001		5	1.16	0.711	1.6	1.08	0.65	1.53	0.161	31.07%	-32.80%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-001		1.08	0.65	1.05	1.48	1.53					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2235-8129		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed pcb 153				32.20%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.714	2.13	0.281	4	CDF	0.2574	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6393	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.02209		0.02209		1	0.509	0.4957	Non-Significant Effect		
Error		0.34695		0.0433688		8					
Total		0.36904				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			27.7	23.2	0.0071	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.935	0.741	0.4994	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-002		5	0.966	0.898	1.03	0.971	0.914	1.05	0.0246	5.69%	-10.78%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-002		0.971	0.919	0.914	0.976	1.05					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-3207-5425		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed pcb 153				32.26%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	1.46	1.86	0.281	8	CDF	0.0915	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.121661		0.121661		1	2.13	0.1829	Non-Significant Effect			
Error	0.457819		0.0572274		8						
Total	0.57948				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.72	23.2	0.3553	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2361	Normal Distribution				
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-003		5	1.09	0.875	1.31	0.992	0.953	1.33	0.0784	16.05%	-25.30%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-003		0.953	1.33	0.992	0.958	1.23					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-6705-5152		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed pcb 153				38.41%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.73	1.86	0.335	8	CDF	0.0607	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.26	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.24336		0.24336		1	3	0.1215	Non-Significant Effect		
Error		0.648784		0.081098		8					
Total		0.892144				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.07	23.2	0.9516	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.826	0.741	0.0297	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-004		5	1.18	0.836	1.53	1.23	0.868	1.48	0.125	23.66%	-35.78%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-004		1.23	1.42	0.868	1.48	0.922					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-0517-3846		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 passed pcb 153			37.04%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	1.79	1.86	0.323	8	CDF	0.0560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.38	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.24056	0.24056		1	3.19	0.1119	Non-Significant Effect			
Error		0.603277	0.0754096		8						
Total		0.843837			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.25	23.2	0.8355	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.906	0.741	0.2520	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-005		5	1.18	0.861	1.5	1.09	0.929	1.54	0.116	21.91%	-35.57%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-005		0.929	1.54	1.36	1.09	0.992					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2910-6203		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 153			75.71%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	3.39	1.86	0.66	8	CDF	0.0048	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.18	2.29	0.1001	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		3.61562		3.61562		1	11.5	0.0095	Significant Effect		
Error		2.52086		0.315107		8					
Total		6.13648				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.53	23.2	0.0965	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.941	0.741	0.5619	Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-006		5	2.07	1.16	2.99	2.07	0.923	2.92	0.331	35.63%	-137.91%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-006		0.923	2.45	2.01	2.92	2.07					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-1427-6420		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed pcb 153			36.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	7.63	1.86	0.32	8	CDF	3.1E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.32	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4.31649		4.31649		1	58.2	6.1E-05	Significant Effect			
Error	0.593376		0.074172		8						
Total	4.90987				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.3	23.2	0.8081		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.829	0.741	0.0326		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
59517-007		5	2.19	1.87	2.5	2.23	1.87	2.43	0.114	11.63%	-150.69%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
59517-007		2.43	2.23	1.87	2.42	1.98					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-7231-0027		Endpoint: PCB 153					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 153			31.77%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	5.79	1.86	0.277	8	CDF	2.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.52	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.85761		1.85761		1	33.5	4.1E-04	Significant Effect			
Error	0.443976		0.055497		8						
Total	2.30159				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.07	23.2	0.3031		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2732		Normal Distribution			
PCB 153 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.872	0.513	1.23	0.972	0.534	1.14	0.129	33.18%	0.00%
29517-008		5	1.73	1.53	1.94	1.76	1.48	1.93	0.0739	9.53%	-98.85%
PCB 153 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.534	0.594	0.972	1.12	1.14					
29517-008		1.8	1.76	1.48	1.7	1.93					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-8994-8619		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 170			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-2177-9764		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 170				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-1126-7395		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 170			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.57648		0.57648		1	371	<1.0E-37	Significant Effect		
Error		0.0124184		0.0015523		8					
Total		0.588899				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-2392-1960		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 170			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1385-1641		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 170			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-3443-9892		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 170			11.17%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.597803		0.597803		1	315	<1.0E-37	Significant Effect			
Error	0.0151624		0.0018953		8						
Total	0.612965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-4615-9026		Endpoint: PCB 170				CETIS Version: CETISv1.9.3					
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 170				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2593-1113		Endpoint: PCB 170					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 170				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 170 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 170 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-2659-7674		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 180				26.49%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.76	2.13	0.121	4	CDF	0.0764	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.19	2.29	0.0911		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0252004		0.0252004		1	3.11	0.1160	Non-Significant Effect			
Error	0.064902		0.0081128		8						
Total	0.0901024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			31.1	23.2	0.0057		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3425		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.559	0.403	0.714	0.486	0.457	0.745	0.0561	22.44%	-21.90%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.632	0.745					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-5619-8563		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 180				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.523037		0.523037		1	259	2.2E-07	Significant Effect		
Error		0.016154		0.0020193		8					
Total		0.539191				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7	23.2	0.0859	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8556	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-1535-3322		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 180				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-0223-4935		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 180			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-9388-4155		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 180			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-4608-1877		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 180			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4180-2119		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 180			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-5753-4171		Endpoint: PCB 180					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 180			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 180 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 180 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-4111-8704		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed pcb 187				16.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.68	1.86	0.074	8	CDF	0.0656	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.42	2.29	0.0187	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0112225		0.0112225		1	2.83	0.1312	Non-Significant Effect		
Error		0.0317564		0.0039696		8					
Total		0.0429789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			14.7	23.2	0.0232	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.865	0.741	0.0868	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.525	0.418	0.632	0.486	0.457	0.669	0.0386	16.41%	-14.62%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.541	0.669					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-8255-1260		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 187			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-4984-4694		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 187				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-3314-7699		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 187			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.504452		0.504452		1	434	<1.0E-37	Significant Effect		
Error		0.0092944		0.0011618		8					
Total		0.513746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-3686-9127		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 187			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-4508-7521		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 187			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-5677-7992		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 187				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-0248-1773		Endpoint: PCB 187					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pcb 187				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 187 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 187 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-5208-0328		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 195			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-2640-5689		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 195				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0733-5200		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pcb 195			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-9628-9360		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 195			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8118-0209		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 195			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-7439-2630		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 195			11.17%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-3386-4409		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 195				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-8039-1021		Endpoint: PCB 195					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pcb 195			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 195 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 195 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-1274-7560		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 206			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-0212-3041		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed pcb 206			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test		1.74		2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test		7		23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test		0.966		0.741	0.8556		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-3345-2953		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 206				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-9630-7087		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 206			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.504452		0.504452		1	434	<1.0E-37	Significant Effect			
Error	0.0092944		0.0011618		8						
Total	0.513746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-6799-8162		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed pcb 206			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-8490-4117		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pcb 206				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.597803		0.597803		1	315	<1.0E-37	Significant Effect			
Error	0.0151624		0.0018953		8						
Total	0.612965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-8148-4772		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 206			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.031	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.583908		0.583908		1		1020	<1.0E-37	Significant Effect		
Error	0.0040232		0.0005747		7						
Total	0.587932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		4	0.971	0.93	1.01	0.978	0.934	0.994	0.0129	2.66%	-111.82%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		Outlier	0.98	0.976	0.934	0.994					

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-2024-2215		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pcb 206			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

CETIS Analytical Report

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 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-8974-1994		Endpoint: PCB 206					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed pcb 206			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.14	23.2	0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.948	0.741	0.6414	Normal Distribution			
PCB 206 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 206 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

CETIS Analytical Report

Report Date: 29 Nov-17 10:46 (p 149 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-4246-0456		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pcb 209			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution				
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Report Date: 29 Nov-17 10:46 (p 150 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-1786-4127		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pcb 209				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.053	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.523037		0.523037		1	259	2.2E-07	Significant Effect			
Error	0.016154		0.0020193		8						
Total	0.539191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	-99.78%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Report Date: 29 Nov-17 10:46 (p 151 of 156)
Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-6439-3323		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed pcb 209				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.046	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.57648		0.57648		1	371	<1.0E-37	Significant Effect			
Error	0.0124184		0.0015523		8						
Total	0.588899				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-104.76%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-6485-7848		Endpoint: PCB 209				CETIS Version: CETISv1.9.3					
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pcb 209			8.74%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.040	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.504452		0.504452		1	434	<1.0E-37	Significant Effect		
Error		0.0092944		0.0011618		8					
Total		0.513746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	-97.99%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Report Date: 29 Nov-17 10:46 (p 153 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-7436-9949		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pcb 209			7.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.032	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.55272		0.55272		1	743	<1.0E-37	Significant Effect			
Error	0.0059524		0.0007441		8						
Total	0.558673				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-102.57%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Report Date: 29 Nov-17 10:46 (p 154 of 156)
 Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-4169-0123		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed pcb 209			11.17%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.051	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.597803		0.597803		1	315	<1.0E-37	Significant Effect		
Error		0.0151624		0.0018953		8					
Total		0.612965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-106.68%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-8272-5796		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:40		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pcb 209				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.033	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.53361		0.53361		1	670	<1.0E-37	Significant Effect			
Error	0.0063684		0.0007961		8						
Total	0.539978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-100.79%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Test Code: 29525Nv-PCB | 19-2262-9629

Bioaccumulation Evaluation - PCB Congeners - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-2243-3903		Endpoint: PCB 209					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 10:41		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed pcb 209			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.05	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.472628		0.472628		1	262	2.1E-07	Significant Effect			
Error	0.01441		0.0018013		8						
Total	0.487038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
PCB 209 Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	-94.85%
PCB 209 Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.914	0.978	0.838	0.853	0.883					

28 day *Macoma nasuta*
Sediment Bioaccumulation Evaluation

Body Burden Data and Statistical Analysis Reports

PAHs

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)										
Acenaphthene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Acenaphthylene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Anthracene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Benzo(a)anthracene	9.65 U		9.01 U		9.06 U		19.00		9.40 U	
Benzo(a)pyrene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Benzo(b)fluoranthene	9.65 U		9.01 U		9.06 U		11.70 J		9.40 U	
Benzo(k)fluoranthene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Benzo(g,h,i)perylene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Chrysene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Dibenzo(a,h)anthracene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Fluoranthene	9.65 U		9.01 U		9.06 U		13.60 J		9.40 U	
Fluorene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Indeno(1,2,3-c,d)pyrene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Naphthalene	9.65 U		9.01 U		9.06 U		8.65 U		9.40 U	
Phenanthrene	9.65 U		9.01 U		9.06 U		9.37 J		9.40 U	
Pyrene	9.65 U		9.01 U		9.06 U		14.60 J		9.40 U	
PAH Total	154.40		144.16		144.96		163.42		150.40	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 1		REP4	*	REP5	*
					REP3	*				
PAHs (ng/g wet weight)										
Acenaphthene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Acenaphthylene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Anthracene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Benzo(a)anthracene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Benzo(a)pyrene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Benzo(b)fluoranthene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Benzo(k)fluoranthene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Benzo(g,h,i)perylene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Chrysene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Dibenzo(a,h)anthracene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Fluoranthene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Fluorene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Indeno(1,2,3-c,d)pyrene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Naphthalene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Phenanthrene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
Pyrene	8.88	U	8.46	U	8.74	U	9.52	U	9.34	U
PAH Total	142.08		135.36		139.84		152.32		149.44	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 2		REP4	*	REP5	*
					REP3	*				
PAHs (ng/g wet weight)										
Acenaphthene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Acenaphthylene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Anthracene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Benzo(a)anthracene	8.88	U	10.20	J	8.71	U	10.20	J	28.30	
Benzo(a)pyrene	8.88	U	9.42	U	8.71	U	9.73	U	9.64	J
Benzo(b)fluoranthene	8.88	U	9.42	U	8.71	U	9.73	U	15.40	J
Benzo(k)fluoranthene	8.88	U	9.42	U	8.71	U	9.73	U	9.21	J
Benzo(g,h,i)perylene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Chrysene	8.88	U	9.42	U	8.71	U	10.10	J	16.90	J
Dibenzo(a,h)anthracene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Fluoranthene	20.20		20.10		16.80	J	23.50		36.90	
Fluorene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Indeno(1,2,3-c,d)pyrene	17.10	J	18.20	J	17.10	J	19.00	J	20.00	
Naphthalene	8.88	U	9.42	U	8.71	U	9.73	U	8.79	U
Phenanthrene	8.88	U	9.42	U	8.71	U	9.73	U	13.10	J
Pyrene	19.50		20.60		17.50		24.40		36.80	
PAH Total	172.24		182.14		164.63		194.23		247.78	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 3		REP4	*	REP5	*
					REP3	*				
PAHs (ng/g wet weight)										
Acenaphthene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Acenaphthylene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Anthracene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Benzo(a)anthracene	9.42	U	12.00	J	9.55	J	9.92	U	15.30	J
Benzo(a)pyrene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Benzo(b)fluoranthene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Benzo(k)fluoranthene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Benzo(g,h,i)perylene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Chrysene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Dibenzo(a,h)anthracene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Fluoranthene	9.42	U	10.20	J	13.00	J	12.70	J	13.50	J
Fluorene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Indeno(1,2,3-c,d)pyrene	16.80	J	9.09	U	16.20	J	18.00	J	17.40	J
Naphthalene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Phenanthrene	9.42	U	9.09	U	8.47	U	9.92	U	9.38	U
Pyrene	9.42	U	10.00	J	12.80	J	12.60	J	11.40	J
PAH Total	158.10		150.37		153.19		172.26		170.16	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)										
Acenaphthene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Acenaphthylene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Anthracene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Benzo(a)anthracene	31.70		36.80		26.70		42.20		44.00	
Benzo(a)pyrene	13.50	J	16.40	J	9.42	U	20.00		21.50	
Benzo(b)fluoranthene	21.30		25.90		15.10	J	30.40		31.40	
Benzo(k)fluoranthene	12.30	J	16.10	J	9.69	J	17.30		18.70	J
Benzo(g,h,i)perylene	8.46	U	8.74	U	9.42	U	10.40	J	10.50	J
Chrysene	24.80		29.60		17.20	J	35.20		37.70	
Dibenzo(a,h)anthracene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Fluoranthene	46.60		57.40		35.90		77.20		64.50	
Fluorene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Indeno(1,2,3-c,d)pyrene	19.90		21.70		19.20		23.10		25.50	
Naphthalene	8.46	U	8.74	U	9.42	U	8.46	U	9.86	U
Phenanthrene	8.46	U	9.23	J	9.42	U	13.00	J	9.86	U
Pyrene	54.80		59.80		41.00		87.30		73.30	
PAH Total	292.58		334.11		249.57		406.86		396.12	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)										
Acenaphthene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Acenaphthylene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Anthracene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Benzo(a)anthracene	21.90		25.80		24.50		30.00		22.30	
Benzo(a)pyrene	8.52	U	8.43	U	8.54	J	10.70	J	8.36	U
Benzo(b)fluoranthene	13.90	J	14.40	J	14.80	J	17.80		14.10	J
Benzo(k)fluoranthene	8.52	U	9.06	J	8.36	U	9.85	J	8.36	U
Benzo(g,h,i)perylene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Chrysene	15.60	J	17.30		18.10		23.60		15.40	J
Dibenzo(a,h)anthracene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Fluoranthene	37.20		40.00		41.70		53.60		35.70	
Fluorene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Indeno(1,2,3-c,d)pyrene	18.30		18.90		18.70		20.10		18.50	
Naphthalene	8.52	U	8.43	U	8.36	U	8.83	U	8.36	U
Phenanthrene	9.22	J	9.83	J	9.12	J	14.20	J	8.36	U
Pyrene	33.90		33.90		37.50		50.20		32.00	
PAH Total	226.70		236.63		239.84		291.86		221.60	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT		Composite 6									
CONTAMINANT		REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)											
Acenaphthene		11.20	J	9.06	U	8.68	U	9.36	U	9.21	U
Acenaphthylene		9.14	U	9.06	U	8.68	U	9.36	U	9.21	U
Anthracene		9.14	U	9.06	U	8.68	U	9.36	U	9.21	U
Benzo(a)anthracene		41.50		34.90		42.60		47.00		33.00	
Benzo(a)pyrene		17.60	J	12.70	J	16.50	J	16.30	J	11.60	J
Benzo(b)fluoranthene		27.50		22.50		26.90		29.30		22.10	
Benzo(k)fluoranthene		13.10	J	11.50	J	11.30	J	14.90	J	9.34	J
Benzo(g,h,i)perylene		9.14	U	9.06	U	9.38	J	10.90	J	9.21	U
Chrysene		39.30		31.80		34.90		39.40		25.80	
Dibenzo(a,h)anthracene		9.14	U	9.06	U	8.68	U	9.36	U	9.21	U
Fluoranthene		82.40		66.20		78.80		92.60		62.30	
Fluorene		9.14	U	9.06	U	8.68	U	9.36	U	9.21	U
Indeno(1,2,3-c,d)pyrene		15.60	J	9.06	U	8.68	U	9.36	U	9.21	U
Naphthalene		9.14	U	9.06	U	8.68	U	9.36	U	9.21	U
Phenanthrene		23.10		16.40	J	21.40		23.80		15.60	J
Pyrene		68.40		56.00		67.30		80.50		52.80	
PAH Total		394.54		324.48		369.84		420.22		306.22	
* = Qualifiers											
U Analyte not detected; below Method											
J Analyte estimated; detection below F											
NA Not Analyzed											

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	REP1	*	REP2	*	Composite 7		REP4	*	REP5	*
					REP3	*				
PAHs (ng/g wet weight)										
Acenaphthene	11.60	J	8.64	U	8.77	U	9.47	U	9.34	U
Acenaphthylene	8.40	U	8.64	U	8.77	U	9.47	U	9.34	U
Anthracene	8.40	U	8.64	U	8.77	U	9.47	U	9.34	U
Benzo(a)anthracene	46.70		36.80		33.70		34.30		30.00	
Benzo(a)pyrene	15.50	J	13.00	J	12.50	J	10.00	J	9.34	U
Benzo(b)fluoranthene	30.10		25.60		23.80		21.60		15.80	J
Benzo(k)fluoranthene	11.80	J	10.60	J	10.20	J	9.77	J	9.34	U
Benzo(g,h,i)perylene	8.75	J	8.64	U	8.77	U	9.47	U	9.34	U
Chrysene	36.20		29.60		29.20		25.50		22.70	
Dibenzo(a,h)anthracene	8.40	U	8.64	U	8.77	U	9.47	U	9.34	U
Fluoranthene	89.20		71.10		68.80		60.80		56.90	
Fluorene	8.40	U	8.64	U	8.77	U	9.47	U	9.34	U
Indeno(1,2,3-c,d)pyrene	8.40	U	8.64	U	8.77	U	9.47	U	19.20	
Naphthalene	8.40	U	8.64	U	8.77	U	9.47	U	9.34	U
Phenanthrene	18.70		16.90	J	17.10	J	14.40	J	14.50	J
Pyrene	74.40		60.10		58.60		50.00		46.60	
PAH Total	393.35		332.82		324.06		302.13		289.76	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

Concentrations of COCs in <i>M. nasuta</i> New Haven Harbor FNP, New Haven, CT										
CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)										
Acenaphthene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Acenaphthylene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Anthracene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Benzo(a)anthracene	37.60		45.70		36.40		32.60		41.00	
Benzo(a)pyrene	10.90	J	12.90	J	10.70	J	10.60	J	11.00	J
Benzo(b)fluoranthene	21.90		26.20		18.50	J	18.30		23.90	
Benzo(k)fluoranthene	11.10	J	12.30	J	12.40	J	9.01	J	9.94	J
Benzo(g,h,i)perylene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Chrysene	26.80		32.50		29.80		27.00		25.70	
Dibenzo(a,h)anthracene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Fluoranthene	87.30		99.70		94.20		83.10		97.20	
Fluorene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Indeno(1,2,3-c,d)pyrene	19.70		9.01	U	19.90		18.40		9.17	U
Naphthalene	8.88	U	9.01	U	9.38	U	8.43	U	9.17	U
Phenanthrene	20.80		23.80		19.90		20.60		25.80	
Pyrene	72.50		79.30		74.60		65.80		77.80	
PAH Total	370.76		404.48		382.06		344.42		385.70	
* = Qualifiers										
U Analyte not detected; below Method										
J Analyte estimated; detection below F										
NA Not Analyzed										

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:31 (p 1 of 2)
Test Code/ID: 20-8923-9275/29524Mn-PAH

Bioaccumulation Evaluation - PAHs - Macoma																EnviroSystems, Inc.		
Start Date: 29 Aug-17			Species: Macoma nasuta					Sample Code: 29524-000										
End Date: 26 Sep-17			Protocol: US ACE NED RIM (2004)					Sample Source: New Haven Harbor FNP -2017										
Sample Date: 29 Aug-17			Material: Laboratory Control Sediment					Sample Station: Laboratory Control - 29524										
Sample	Rep	Pos	Aceneaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
29524-000	1	1																
29524-000	2	15																
29524-000	3	25																
29524-000	4	31																
29524-000	5	47																
29517-009	1	2	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65
29517-009	2	18	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01
29517-009	3	22	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06
29517-009	4	34	8.65	8.65	8.65	19	8.65	11.7	8.65	8.65	8.65	8.65	13.6	8.65	8.65	8.65	9.37	14.6
29517-009	5	46	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
29517-001	1	7	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88
29517-001	2	12	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46	8.46
29517-001	3	27	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74
29517-001	4	39	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52
29517-001	5	50	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34
29517-002	1	9	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	8.88	20.2	8.88	17.1	8.88	8.88	19.5
29517-002	2	13	9.42	9.42	9.42	10.2	9.42	9.42	9.42	9.42	9.42	9.42	20.1	9.42	18.2	9.42	9.42	20.6
29517-002	3	21	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	16.8	8.71	17.1	8.71	8.71	17.5
29517-002	4	40	9.73	9.73	9.73	10.2	9.73	9.73	9.73	9.73	10.1	9.73	23.5	9.73	19	9.73	9.73	24.4
29517-002	5	42	8.79	8.79	8.79	28.3	9.64	15.4	8.79	9.21	16.9	8.79	36.9	8.79	20	8.79	13.1	36.8
29517-003	1	8	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	16.8	9.42	9.42	9.42
29517-003	2	17	9.09	9.09	9.09	12	9.09	9.09	9.09	9.09	9.09	9.09	10.2	9.09	9.09	9.09	9.09	10
29517-003	3	24	8.47	8.47	8.47	9.55	8.47	8.47	8.47	8.47	8.47	8.47	13	8.47	16.2	8.47	8.47	12.8
29517-003	4	35	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	12.7	9.92	18	9.92	9.92	12.6
29517-003	5	48	9.38	9.38	9.38	15.3	9.38	9.38	9.38	9.38	9.38	9.38	13.5	9.38	17.4	9.38	9.38	11.4
29517-004	1	4	8.46	8.46	8.46	31.7	13.5	21.3	8.46	12.3	24.8	8.46	46.6	8.46	19.9	8.46	8.46	54.8
29517-004	2	16	8.74	8.74	8.74	36.8	16.4	25.9	8.74	16.1	29.6	8.74	57.4	8.74	21.7	8.74	9.23	59.8

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:31 (p 2 of 2)

Test Code/ID: 20-8923-9275/29524Mn-PAH

Sample	Rep	Pos	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
29517-004	3	30	9.42	9.42	9.42	26.7	9.42	15.1	9.42	9.69	17.2	9.42	35.9	9.42	19.2	9.42	9.42	41
29517-004	4	32	8.46	8.46	8.46	42.2	20	30.4	10.4	17.3	35.2	8.46	77.2	8.46	23.1	8.46	13	87.3
29517-004	5	43	9.86	9.86	9.86	44	21.5	31.4	10.5	18.7	37.7	9.86	64.5	9.86	25.5	9.86	9.86	73.3
29517-005	1	5	8.52	8.52	8.52	21.9	8.52	13.9	8.52	8.52	15.6	8.52	37.2	8.52	18.3	8.52	9.22	33.9
29517-005	2	14	8.43	8.43	8.43	25.8	8.43	14.4	8.43	9.06	17.3	8.43	40	8.43	18.9	8.43	9.83	33.9
29517-005	3	26	8.36	8.36	8.36	24.5	8.54	14.8	8.36	8.36	18.1	8.36	41.7	8.36	18.7	8.36	9.12	37.5
29517-005	4	36	8.83	8.83	8.83	30	10.7	17.8	8.83	9.85	23.6	8.83	53.6	8.83	20.1	8.83	14.2	50.2
29517-005	5	44	8.36	8.36	8.36	22.3	8.36	14.1	8.36	8.36	15.4	8.36	35.7	8.36	18.5	8.36	8.36	32
29517-006	1	10	11.2	9.14	9.14	41.5	17.6	27.5	9.14	13.1	39.3	9.14	82.4	9.14	15.6	9.14	23.1	68.4
29517-006	2	19	9.06	9.06	9.06	34.9	12.7	22.5	9.06	11.5	31.8	9.06	66.2	9.06	9.06	9.06	16.4	56
29517-006	3	23	8.68	8.68	8.68	42.6	16.5	26.9	9.38	11.3	34.9	8.68	78.8	8.68	8.68	8.68	21.4	67.3
29517-006	4	37	9.36	9.36	9.36	47	16.3	29.3	10.9	14.9	39.4	9.36	92.6	9.36	9.36	9.36	23.8	80.5
29517-006	5	45	9.21	9.21	9.21	33	11.6	22.1	9.21	9.34	25.8	9.21	62.3	9.21	9.21	9.21	15.6	52.8
59517-007	1	6	11.6	8.4	8.4	46.7	15.5	30.1	8.75	11.8	36.2	8.4	89.2	8.4	8.4	8.4	18.7	74.4
59517-007	2	11	8.64	8.64	8.64	36.8	13	25.6	8.64	10.6	29.6	8.64	71.1	8.64	8.64	8.64	16.9	60.1
59517-007	3	29	8.77	8.77	8.77	33.7	12.5	23.8	8.77	10.2	29.2	8.77	68.8	8.77	8.77	8.77	17.1	58.6
59517-007	4	33	9.47	9.47	9.47	34.3	10	21.6	9.47	9.77	25.5	9.47	60.8	9.47	9.47	9.47	14.4	50
59517-007	5	49	9.34	9.34	9.34	30	9.34	15.8	9.34	9.34	22.7	9.34	56.9	9.34	19.2	9.34	14.5	46.6
29517-008	1	3	8.88	8.88	8.88	37.6	10.9	21.9	8.88	11.1	26.8	8.88	87.3	8.88	19.7	8.88	20.8	72.5
29517-008	2	20	9.01	9.01	9.01	45.7	12.9	26.2	9.01	12.3	32.5	9.01	99.7	9.01	9.01	9.01	23.8	79.3
29517-008	3	28	9.38	9.38	9.38	36.4	10.7	18.5	9.38	12.4	29.8	9.38	94.2	9.38	19.9	9.38	19.9	74.6
29517-008	4	38	8.43	8.43	8.43	32.6	10.6	18.3	8.43	9.01	27	8.43	83.1	8.43	18.4	8.43	20.6	65.8
29517-008	5	41	9.17	9.17	9.17	41	11	23.9	9.17	9.94	25.7	9.17	97.2	9.17	9.17	9.17	25.8	77.8

CETIS Summary Report

Report Date: 14 Nov-17 14:37 (p 1 of 12)
 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma					EnviroSystems, Inc.	
Batch ID:	04-1697-7794	Test Type:	Bioaccumulation - PAHs	Analyst:	Nancy Roka	
Start Date:	29 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	26 Sep-17	Species:	Macoma nasuta	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
16-9515-5409	Acenaphthene	Equal Variance t Two-Sample Test	0.7297	29517-001	passed acenaphthene	
12-2779-6796	Acenaphthene	Equal Variance t Two-Sample Test	0.5701	29517-002	passed acenaphthene	
06-9634-6984	Acenaphthene	Equal Variance t Two-Sample Test	0.3684	29517-003	passed acenaphthene	
10-4803-7441	Acenaphthene	Equal Variance t Two-Sample Test	0.6866	29517-004	passed acenaphthene	
00-7594-0287	Acenaphthene	Equal Variance t Two-Sample Test	0.9953	29517-005	passed acenaphthene	
09-6488-0173	Acenaphthene	Equal Variance t Two-Sample Test	0.2409	29517-006	passed acenaphthene	
20-8756-6940	Acenaphthene	Equal Variance t Two-Sample Test	0.6238	29517-006	passed acenaphthene	
06-9249-4977	Acenaphthene	Equal Variance t Two-Sample Test	0.2426	59517-007	passed acenaphthene	
14-9382-3316	Acenaphthene	Equal Variance t Two-Sample Test	0.6398	59517-007	passed acenaphthene	
06-1527-6389	Acenaphthene	Equal Variance t Two-Sample Test	0.7676	29517-008	passed acenaphthene	
21-0457-5701	Acenaphthylene	Equal Variance t Two-Sample Test	0.7297	29517-001	passed acenaphthylene	
17-8534-1696	Acenaphthylene	Equal Variance t Two-Sample Test	0.5701	29517-002	passed acenaphthylene	
19-3716-4424	Acenaphthylene	Equal Variance t Two-Sample Test	0.3684	29517-003	passed acenaphthylene	
08-7059-8276	Acenaphthylene	Equal Variance t Two-Sample Test	0.6866	29517-004	passed acenaphthylene	
05-9861-2043	Acenaphthylene	Equal Variance t Two-Sample Test	0.9953	29517-005	passed acenaphthylene	
00-6098-6597	Acenaphthylene	Equal Variance t Two-Sample Test	0.6180	29517-006	passed acenaphthylene	
09-3350-6410	Acenaphthylene	Equal Variance t Two-Sample Test	0.7918	59517-007	passed acenaphthylene	
03-9641-8777	Acenaphthylene	Equal Variance t Two-Sample Test	0.7676	29517-008	passed acenaphthylene	
16-8991-8554	Anthracene	Equal Variance t Two-Sample Test	0.7297	29517-001	passed anthracene	
00-8137-9676	Anthracene	Equal Variance t Two-Sample Test	0.5701	29517-002	passed anthracene	
15-5458-9354	Anthracene	Equal Variance t Two-Sample Test	0.3684	29517-003	passed anthracene	
19-0122-7028	Anthracene	Equal Variance t Two-Sample Test	0.6866	29517-004	passed anthracene	
07-5066-6347	Anthracene	Equal Variance t Two-Sample Test	0.9953	29517-005	passed anthracene	
01-2549-6482	Anthracene	Equal Variance t Two-Sample Test	0.6180	29517-006	passed anthracene	
12-8899-1779	Anthracene	Equal Variance t Two-Sample Test	0.7918	59517-007	passed anthracene	
21-3037-5802	Anthracene	Equal Variance t Two-Sample Test	0.7676	29517-008	passed anthracene	
18-5901-9404	Benzo(a)anthracene	Equal Variance t Two-Sample Test	0.8529	29517-001	passed benzo(a)anthracene	

CETIS Summary Report

Report Date: 14 Nov-17 14:37 (p 2 of 12)
Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
10-9626-6928	Benzo(a)anthracene	Wilcoxon Rank Sum Two-Sample Test	0.9524	29517-001 passed benzo(a)anthracene
02-9019-3522	Benzo(a)anthracene	Wilcoxon Rank Sum Two-Sample Test	0.4762	29517-002 passed benzo(a)anthracene
04-0814-4420	Benzo(a)anthracene	Wilcoxon Rank Sum Two-Sample Test	0.7222	29517-002 passed benzo(a)anthracene
17-6304-1167	Benzo(a)anthracene	Unequal Variance t Two-Sample Test	0.0787	29517-003 passed benzo(a)anthracene
05-5753-1683	Benzo(a)anthracene	Wilcoxon Rank Sum Two-Sample Test	0.1548	29517-003 passed benzo(a)anthracene
13-8287-1898	Benzo(a)anthracene	Equal Variance t Two-Sample Test	8.0E-05	29517-004 failed benzo(a)anthracene
10-7792-2123	Benzo(a)anthracene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed benzo(a)anthracene
15-3988-3158	Benzo(a)anthracene	Equal Variance t Two-Sample Test	1.1E-05	29517-006 failed benzo(a)anthracene
09-3278-6524	Benzo(a)anthracene	Equal Variance t Two-Sample Test	4.1E-05	59517-007 failed benzo(a)anthracene
05-4800-7414	Benzo(a)anthracene	Equal Variance t Two-Sample Test	7.2E-06	29517-008 failed benzo(a)anthracene
20-6853-4667	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed benzo(a)pyrene
14-9355-4713	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.3300	29517-002 passed benzo(a)pyrene
10-1685-8812	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed benzo(a)pyrene
20-6734-3713	Benzo(a)pyrene	Unequal Variance t Two-Sample Test	0.0166	29517-004 failed benzo(a)pyrene
14-8449-9241	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.9949	29517-005 passed benzo(a)pyrene
17-8402-0018	Benzo(a)pyrene	Wilcoxon Rank Sum Two-Sample Test	0.9524	29517-005 passed benzo(a)pyrene
19-7899-3430	Benzo(a)pyrene	Unequal Variance t Two-Sample Test	0.0041	29517-006 failed benzo(a)pyrene
01-0817-6730	Benzo(a)pyrene	Unequal Variance t Two-Sample Test	0.0301	59517-007 failed benzo(a)pyrene
19-4461-0143	Benzo(a)pyrene	Equal Variance t Two-Sample Test	5.3E-05	29517-008 failed benzo(a)pyrene
19-6729-6684	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.0010	29517-008 failed benzo(a)pyrene
00-9593-5742	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.8529	29517-001 passed benzo(b)fluoranthene
02-6558-6344	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.9076	29517-001 passed benzo(b)fluoranthene
00-5633-1059	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.8161	29517-002 passed benzo(b)fluoranthene
00-0406-4428	Benzo(b)fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.5794	29517-002 passed benzo(b)fluoranthene
06-8784-8246	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.5307	29517-003 passed benzo(b)fluoranthene
08-3079-0295	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.8080	29517-003 passed benzo(b)fluoranthene
03-7623-5597	Benzo(b)fluoranthene	Unequal Variance t Two-Sample Test	0.0040	29517-004 failed benzo(b)fluoranthene
14-4387-9109	Benzo(b)fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed benzo(b)fluoranthene
19-4812-1210	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	2.9E-06	29517-006 failed benzo(b)fluoranthene
08-9055-5743	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	2.4E-04	59517-007 failed benzo(b)fluoranthene
19-3497-9679	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	3.6E-05	29517-008 failed benzo(b)fluoranthene
05-6508-1143	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed benzo(g,h,i)perylene
07-4984-3120	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.5701	29517-002 passed benzo(g,h,i)perylene
12-1137-3709	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed benzo(g,h,i)perylene
08-3671-6446	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.2300	29517-004 passed benzo(g,h,i)perylene
12-7825-4816	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.9953	29517-005 passed benzo(g,h,i)perylene
07-7216-7909	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.4185	29517-006 passed benzo(g,h,i)perylene
11-1171-4918	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.1739	29517-006 passed benzo(g,h,i)perylene
04-8996-7419	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.7364	59517-007 passed benzo(g,h,i)perylene
17-8740-1125	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.7676	29517-008 passed benzo(g,h,i)perylene
05-0490-8675	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed benzo(k)fluoranthene
20-4905-2854	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.4448	29517-002 passed benzo(k)fluoranthene
01-6804-5974	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed benzo(k)fluoranthene
15-0045-7303	Benzo(k)fluoranthene	Unequal Variance t Two-Sample Test	0.0139	29517-004 failed benzo(k)fluoranthene
15-2706-2427	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.8203	29517-005 passed benzo(k)fluoranthene
03-9805-4327	Benzo(k)fluoranthene	Unequal Variance t Two-Sample Test	0.0194	29517-006 failed benzo(k)fluoranthene
07-8296-6415	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.0155	59517-007 failed benzo(k)fluoranthene
11-2403-4562	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.0151	29517-008 failed benzo(k)fluoranthene
13-4267-3141	Chrysene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed chrysene
21-0201-8219	Chrysene	Equal Variance t Two-Sample Test	0.3624	29517-002 passed chrysene
15-3461-0374	Chrysene	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-002 passed chrysene
04-6891-0016	Chrysene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed chrysene
07-6121-4354	Chrysene	Unequal Variance t Two-Sample Test	0.0029	29517-004 failed chrysene

002-158-534-3

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Analyst: _____ QA: _____

CETIS Summary Report

Report Date: 14 Nov-17 14:37 (p 3 of 12)
Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
19-5865-9720	Chrysene	Equal Variance t Two-Sample Test	2.8E-06	29517-005 failed chrysene
19-8323-7882	Chrysene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed chrysene
12-6851-1792	Chrysene	Unequal Variance t Two-Sample Test	3.0E-04	29517-006 failed chrysene
04-9502-1458	Chrysene	Unequal Variance t Two-Sample Test	5.2E-04	59517-007 failed chrysene
00-9801-6006	Chrysene	Unequal Variance t Two-Sample Test	5.2E-05	29517-008 failed chrysene
10-8624-8798	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed dibenz(a,h)anthracene
06-5869-5271	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.5701	29517-002 passed dibenz(a,h)anthracene
13-6783-6994	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed dibenz(a,h)anthracene
01-4831-3854	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.6866	29517-004 passed dibenz(a,h)anthracene
03-4889-0797	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.9953	29517-005 passed dibenz(a,h)anthracene
05-6423-3203	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.6180	29517-006 passed dibenz(a,h)anthracene
13-0173-9061	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.7918	59517-007 passed dibenz(a,h)anthracene
12-0304-2249	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.7676	29517-008 passed dibenz(a,h)anthracene
09-2738-7841	Fluoranthene	Equal Variance t Two-Sample Test	0.8529	29517-001 passed fluoranthene
07-9428-5176	Fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.9524	29517-001 passed fluoranthene
03-2789-6060	Fluoranthene	Equal Variance t Two-Sample Test	1.8E-04	29517-002 failed fluoranthene
09-9260-8810	Fluoranthene	Equal Variance t Two-Sample Test	0.0031	29517-002 failed fluoranthene
20-8651-4021	Fluoranthene	Equal Variance t Two-Sample Test	0.1061	29517-003 passed fluoranthene
20-9876-3152	Fluoranthene	Unequal Variance t Two-Sample Test	0.0015	29517-004 failed fluoranthene
04-6922-2007	Fluoranthene	Equal Variance t Two-Sample Test	1.7E-07	29517-005 failed fluoranthene
07-0158-3824	Fluoranthene	Equal Variance t Two-Sample Test	5.8E-06	29517-005 failed fluoranthene
17-0314-9022	Fluoranthene	Unequal Variance t Two-Sample Test	1.4E-04	29517-006 failed fluoranthene
10-8463-8045	Fluoranthene	Equal Variance t Two-Sample Test	2.4E-07	59517-007 failed fluoranthene
02-9245-9539	Fluoranthene	Unequal Variance t Two-Sample Test	2.4E-04	59517-007 failed fluoranthene
16-0117-7362	Fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed fluoranthene
18-6802-8294	Fluorene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed fluorene
12-0670-9540	Fluorene	Equal Variance t Two-Sample Test	0.5701	29517-002 passed fluorene
20-7290-5171	Fluorene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed fluorene
19-3189-0067	Fluorene	Equal Variance t Two-Sample Test	0.6866	29517-004 passed fluorene
11-2347-9163	Fluorene	Equal Variance t Two-Sample Test	0.9953	29517-005 passed fluorene
11-4482-3711	Fluorene	Equal Variance t Two-Sample Test	0.6180	29517-006 passed fluorene
06-2480-7162	Fluorene	Equal Variance t Two-Sample Test	0.7918	59517-007 passed fluorene
17-4222-9425	Fluorene	Equal Variance t Two-Sample Test	0.7676	29517-008 passed fluorene
19-9254-9506	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed indeno(1,2,3-cd)pyrene
02-0356-2574	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	1.4E-07	29517-002 failed indeno(1,2,3-cd)pyrene
21-2503-9784	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed indeno(1,2,3-cd)pyrene
07-2625-2056	Indeno(1,2,3-cd)pyrene	Wilcoxon Rank Sum Two-Sample Test	0.0159	29517-003 failed indeno(1,2,3-cd)pyrene
12-3588-9906	Indeno(1,2,3-cd)pyrene	Unequal Variance t Two-Sample Test	1.9E-04	29517-004 failed indeno(1,2,3-cd)pyrene
15-7064-5030	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed indeno(1,2,3-cd)pyrene
01-3289-3734	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	0.6238	29517-006 passed indeno(1,2,3-cd)pyrene
20-0669-2424	Indeno(1,2,3-cd)pyrene	Wilcoxon Rank Sum Two-Sample Test	0.3651	29517-006 passed indeno(1,2,3-cd)pyrene
10-0582-4791	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	0.8637	59517-007 passed indeno(1,2,3-cd)pyrene
09-4134-7940	Indeno(1,2,3-cd)pyrene	Wilcoxon Rank Sum Two-Sample Test	0.7262	59517-007 passed indeno(1,2,3-cd)pyrene
03-7275-1878	Indeno(1,2,3-cd)pyrene	Unequal Variance t Two-Sample Test	0.0370	29517-008 failed indeno(1,2,3-cd)pyrene
06-6900-0045	Naphthalene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed naphthalene
17-6686-9220	Naphthalene	Equal Variance t Two-Sample Test	0.5701	29517-002 passed naphthalene
21-2907-0969	Naphthalene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed naphthalene
18-8260-8490	Naphthalene	Equal Variance t Two-Sample Test	0.6866	29517-004 passed naphthalene
08-3902-2578	Naphthalene	Equal Variance t Two-Sample Test	0.9953	29517-005 passed naphthalene
14-8886-0995	Naphthalene	Equal Variance t Two-Sample Test	0.6180	29517-006 passed naphthalene
04-6944-0917	Naphthalene	Equal Variance t Two-Sample Test	0.7918	59517-007 passed naphthalene
04-9697-9453	Naphthalene	Equal Variance t Two-Sample Test	0.7676	29517-008 passed naphthalene
06-1712-5598	Phenanthrene	Equal Variance t Two-Sample Test	0.8947	29517-001 passed phenanthrene

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Bioaccumulation Evaluation - PAHs - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
08-7953-5621	Phenanthrene	Equal Variance t Two-Sample Test	0.6693	29517-002 passed phenanthrene
10-5061-1957	Phenanthrene	Wilcoxon Rank Sum Two-Sample Test	0.4206	29517-002 passed phenanthrene
05-4209-7990	Phenanthrene	Equal Variance t Two-Sample Test	0.5609	29517-003 passed phenanthrene
03-6471-4737	Phenanthrene	Equal Variance t Two-Sample Test	0.5733	29517-004 passed phenanthrene
06-4034-2246	Phenanthrene	Unequal Variance t Two-Sample Test	0.2150	29517-004 passed phenanthrene
17-7984-5595	Phenanthrene	Equal Variance t Two-Sample Test	0.7028	29517-005 passed phenanthrene
19-9541-5648	Phenanthrene	Wilcoxon Rank Sum Two-Sample Test	0.4206	29517-005 passed phenanthrene
00-9333-4825	Phenanthrene	Unequal Variance t Two-Sample Test	0.0016	29517-006 failed phenanthrene
03-9062-1316	Phenanthrene	Unequal Variance t Two-Sample Test	5.4E-04	59517-007 failed phenanthrene
04-9348-4257	Phenanthrene	Unequal Variance t Two-Sample Test	1.7E-04	29517-008 failed phenanthrene
03-4324-1565	Pyrene	Equal Variance t Two-Sample Test	0.8529	29517-001 passed pyrene
10-8598-1946	Pyrene	Wilcoxon Rank Sum Two-Sample Test	0.9524	29517-001 passed pyrene
07-2007-3505	Pyrene	Equal Variance t Two-Sample Test	0.0030	29517-002 failed pyrene
07-2366-4360	Pyrene	Equal Variance t Two-Sample Test	3.4E-04	29517-002 failed pyrene
03-7332-3826	Pyrene	Equal Variance t Two-Sample Test	0.2487	29517-003 passed pyrene
15-0730-7850	Pyrene	Unequal Variance t Two-Sample Test	0.0014	29517-004 failed pyrene
05-6447-5409	Pyrene	Equal Variance t Two-Sample Test	2.5E-05	29517-005 failed pyrene
21-4041-5436	Pyrene	Equal Variance t Two-Sample Test	6.5E-07	29517-005 failed pyrene
11-0209-4356	Pyrene	Equal Variance t Two-Sample Test	2.3E-06	29517-006 failed pyrene
11-3519-9950	Pyrene	Equal Variance t Two-Sample Test	5.7E-06	59517-007 failed pyrene
08-6210-6732	Pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed pyrene

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Bioaccumulation Evaluation - PAHs - Macoma											EnviroSystems, Inc.
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.5	8.28	10.7	8.68	11.2	0.439	0.982	10.34%	-3.80%
59517-007		5	9.56	8.08	11	8.64	11.6	0.533	1.19	12.47%	-4.48%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.09	8.77	9.41	8.68	9.36	0.114	0.254	2.80%	0.70%
59517-007		5	8.92	8.35	9.5	8.4	9.47	0.206	0.461	5.17%	2.51%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.09	8.77	9.41	8.68	9.36	0.114	0.254	2.80%	0.70%
59517-007		5	8.92	8.35	9.5	8.4	9.47	0.206	0.461	5.17%	2.51%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6	9.01	19	1.95	4.35	38.80%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	19.92%
29517-002		5	13.3	2.78	23.7	8.71	28.3	3.77	8.44	63.65%	-18.12%
29517-003		5	11.2	8.14	14.3	9.42	15.3	1.12	2.5	22.23%	-0.12%
29517-004		5	36.3	27.3	45.2	26.7	44	3.22	7.21	19.86%	-223.24%
29517-005		5	24.9	20.8	29	21.9	30	1.46	3.27	13.13%	-121.85%
29517-006		5	39.8	32.6	47	33	47	2.58	5.76	14.48%	-254.60%
59517-007		5	36.3	28.5	44.1	30	46.7	2.82	6.3	17.36%	-223.41%
29517-008		5	38.7	32.5	44.8	32.6	45.7	2.21	4.95	12.80%	-244.44%

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Bioaccumulation Evaluation - PAHs - Macoma											EnviroSystems, Inc.
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.28	8.71	9.84	8.71	9.73	0.205	0.457	4.93%	-1.33%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	16.2	10.1	22.2	9.42	21.5	2.19	4.89	30.28%	-76.58%
29517-005		5	8.91	7.66	10.2	8.36	10.7	0.449	1	11.26%	2.67%
29517-006		5	14.9	11.7	18.2	11.6	17.6	1.17	2.62	17.56%	-63.21%
59517-007		5	12.1	8.99	15.1	9.34	15.5	1.11	2.48	20.53%	-31.83%
29517-008		5	11.2	10	12.4	10.6	12.9	0.426	0.952	8.49%	-22.57%
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1	9.01	11.7	0.498	1.11	11.40%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	7.95%
29517-002		5	10.4	6.94	13.9	8.71	15.4	1.26	2.81	26.94%	-6.80%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	5.20%
29517-004		5	24.8	16.4	33.2	15.1	31.4	3.02	6.75	27.21%	-154.20%
29517-005		5	15	13	17	13.9	17.8	0.716	1.6	10.68%	-53.63%
29517-006		5	25.7	21.7	29.6	22.1	29.3	1.43	3.19	12.45%	-162.80%
59517-007		5	23.4	16.8	29.9	15.8	30.1	2.35	5.27	22.52%	-139.45%
29517-008		5	21.8	17.5	26	18.3	26.2	1.53	3.42	15.74%	-122.86%
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	9.5	8.35	10.7	8.46	10.5	0.417	0.932	9.81%	-3.82%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.54	8.58	10.5	9.06	10.9	0.345	0.77	8.08%	-4.19%
59517-007		5	8.99	8.52	9.47	8.64	9.47	0.17	0.381	4.24%	1.75%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.19	8.68	9.7	8.71	9.73	0.183	0.41	4.46%	-0.39%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	14.8	10.2	19.4	9.69	18.7	1.67	3.73	25.14%	-61.87%
29517-005		5	8.83	8.04	9.62	8.36	9.85	0.286	0.639	7.23%	3.54%
29517-006		5	12	9.44	14.6	9.34	14.9	0.934	2.09	17.36%	-31.40%
59517-007		5	10.3	9.17	11.5	9.34	11.8	0.421	0.941	9.10%	-12.98%
29517-008		5	11	9.12	12.8	9.01	12.4	0.661	1.48	13.49%	-19.62%

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Bioaccumulation Evaluation - PAHs - Macoma											EnviroSystems, Inc.
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	10.8	6.52	15.1	8.71	16.9	1.54	3.45	31.95%	-18.00%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	28.9	18.7	39.1	17.2	37.7	3.68	8.24	28.50%	-215.71%
29517-005		5	18	13.9	22.1	15.4	23.6	1.49	3.33	18.51%	-96.64%
29517-006		5	34.2	27.2	41.3	25.8	39.4	2.55	5.7	16.64%	-274.04%
59517-007		5	28.6	22.3	35	22.7	36.2	2.28	5.09	17.76%	-212.87%
29517-008		5	28.4	24.9	31.8	25.7	32.5	1.24	2.76	9.75%	-209.81%
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.09	8.77	9.41	8.68	9.36	0.114	0.254	2.80%	0.70%
59517-007		5	8.92	8.35	9.5	8.4	9.47	0.206	0.461	5.17%	2.51%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6	9.01	13.6	0.872	1.95	19.22%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	11.40%
29517-002		5	23.5	13.7	33.3	16.8	36.9	3.51	7.86	33.43%	-131.66%
29517-003		5	11.8	9.49	14	9.42	13.5	0.817	1.83	15.53%	-15.97%
29517-004		5	56.3	36.5	76.1	35.9	77.2	7.13	15.9	28.29%	-455.21%
29517-005		5	41.6	32.8	50.4	35.7	53.6	3.17	7.08	17.01%	-310.49%
29517-006		5	76.5	61.2	91.8	62.3	92.6	5.51	12.3	16.11%	-653.75%
59517-007		5	69.4	53.8	84.9	56.9	89.2	5.59	12.5	18.03%	-583.75%
29517-008		5	92.3	83.7	101	83.1	99.7	3.1	6.93	7.51%	-809.90%
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.09	8.77	9.41	8.68	9.36	0.114	0.254	2.80%	0.70%
59517-007		5	8.92	8.35	9.5	8.4	9.47	0.206	0.461	5.17%	2.51%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%

CETIS Summary Report

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma											EnviroSystems, Inc.
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	18.3	16.7	19.8	17.1	20	0.56	1.25	6.85%	-99.69%
29517-003		5	15.5	11	20	9.09	18	1.63	3.64	23.52%	-69.30%
29517-004		5	21.9	18.7	25	19.2	25.5	1.13	2.54	11.59%	-139.02%
29517-005		5	18.9	18	19.8	18.3	20.1	0.316	0.707	3.74%	-106.47%
29517-006		5	10.4	6.75	14	8.68	15.6	1.31	2.93	28.20%	-13.41%
59517-007		5	10.9	5.11	16.7	8.4	19.2	2.08	4.66	42.76%	-19.03%
29517-008		5	15.2	8.23	22.2	9.01	19.9	2.52	5.64	37.02%	-66.44%
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63	8.65	9.65	0.172	0.384	4.20%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	1.81%
29517-002		5	9.11	8.55	9.66	8.71	9.73	0.199	0.446	4.90%	0.52%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	-1.11%
29517-004		5	8.99	8.21	9.76	8.46	9.86	0.28	0.626	6.96%	1.81%
29517-005		5	8.5	8.26	8.74	8.36	8.83	0.0876	0.196	2.30%	7.14%
29517-006		5	9.09	8.77	9.41	8.68	9.36	0.114	0.254	2.80%	0.70%
59517-007		5	8.92	8.35	9.5	8.4	9.47	0.206	0.461	5.17%	2.51%
29517-008		5	8.97	8.53	9.42	8.43	9.38	0.16	0.357	3.98%	1.97%
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63	9.01	9.65	0.118	0.264	2.84%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	3.33%
29517-002		5	9.97	7.74	12.2	8.71	13.1	0.804	1.8	18.04%	-7.21%
29517-003		5	9.26	8.6	9.92	8.47	9.92	0.238	0.531	5.74%	0.45%
29517-004		5	9.99	7.81	12.2	8.46	13	0.785	1.76	17.56%	-7.49%
29517-005		5	10.1	7.26	13	8.36	14.2	1.04	2.33	22.92%	-9.12%
29517-006		5	20.1	15.3	24.8	15.6	23.8	1.71	3.82	19.03%	-115.75%
59517-007		5	16.3	14	18.6	14.4	18.7	0.825	1.84	11.30%	-75.52%
29517-008		5	22.2	19.1	25.3	19.9	25.8	1.13	2.52	11.35%	-138.55%
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3	9.01	14.6	1.07	2.39	23.14%	0.00%
29517-001		5	8.99	8.45	9.53	8.46	9.52	0.195	0.436	4.85%	13.11%
29517-002		5	23.8	14.2	33.3	17.5	36.8	3.45	7.71	32.45%	-129.70%
29517-003		5	11.2	9.37	13.1	9.42	12.8	0.677	1.51	13.46%	-8.70%
29517-004		5	63.2	41.2	85.3	41	87.3	7.93	17.7	28.04%	-511.37%
29517-005		5	37.5	28.3	46.7	32	50.2	3.3	7.37	19.66%	-262.53%
29517-006		5	65	51.3	78.7	52.8	80.5	4.93	11	16.97%	-528.38%
59517-007		5	57.9	44.5	71.4	46.6	74.4	4.84	10.8	18.66%	-460.13%
29517-008		5	74	67.4	80.6	65.8	79.3	2.37	5.3	7.16%	-615.39%

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma						EnviroSystems, Inc.
Acenaphthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		11.2	9.06	8.68	9.36	9.21
59517-007		11.6	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Acenaphthylene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Benzo(a)anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	19	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	10.2	8.71	10.2	28.3
29517-003		9.42	12	9.55	9.92	15.3
29517-004		31.7	36.8	26.7	42.2	44
29517-005		21.9	25.8	24.5	30	22.3
29517-006		41.5	34.9	42.6	47	33
59517-007		46.7	36.8	33.7	34.3	30
29517-008		37.6	45.7	36.4	32.6	41

CETIS Summary Report

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma						EnviroSystems, Inc.
Benzo(a)pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	9.64
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		13.5	16.4	9.42	20	21.5
29517-005		8.52	8.43	8.54	10.7	8.36
29517-006		17.6	12.7	16.5	16.3	11.6
59517-007		15.5	13	12.5	10	9.34
29517-008		10.9	12.9	10.7	10.6	11
Benzo(b)fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	11.7	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	15.4
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		21.3	25.9	15.1	30.4	31.4
29517-005		13.9	14.4	14.8	17.8	14.1
29517-006		27.5	22.5	26.9	29.3	22.1
59517-007		30.1	25.6	23.8	21.6	15.8
29517-008		21.9	26.2	18.5	18.3	23.9
Benzo(g,h,i)perylene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	10.4	10.5
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	9.38	10.9	9.21
59517-007		8.75	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Benzo(k)fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	9.21
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		12.3	16.1	9.69	17.3	18.7
29517-005		8.52	9.06	8.36	9.85	8.36
29517-006		13.1	11.5	11.3	14.9	9.34
59517-007		11.8	10.6	10.2	9.77	9.34
29517-008		11.1	12.3	12.4	9.01	9.94

CETIS Summary Report

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma						EnviroSystems, Inc.
Chrysene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	10.1	16.9
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		24.8	29.6	17.2	35.2	37.7
29517-005		15.6	17.3	18.1	23.6	15.4
29517-006		39.3	31.8	34.9	39.4	25.8
59517-007		36.2	29.6	29.2	25.5	22.7
29517-008		26.8	32.5	29.8	27	25.7
Dibenz(a,h)anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	13.6	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		20.2	20.1	16.8	23.5	36.9
29517-003		9.42	10.2	13	12.7	13.5
29517-004		46.6	57.4	35.9	77.2	64.5
29517-005		37.2	40	41.7	53.6	35.7
29517-006		82.4	66.2	78.8	92.6	62.3
59517-007		89.2	71.1	68.8	60.8	56.9
29517-008		87.3	99.7	94.2	83.1	97.2
Fluorene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17

CETIS Summary Report

Report Date: 14 Nov-17 14:38 (p 12 of 12)
 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma						EnviroSystems, Inc.
Indeno(1,2,3-cd)pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		17.1	18.2	17.1	19	20
29517-003		16.8	9.09	16.2	18	17.4
29517-004		19.9	21.7	19.2	23.1	25.5
29517-005		18.3	18.9	18.7	20.1	18.5
29517-006		15.6	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	19.2
29517-008		19.7	9.01	19.9	18.4	9.17
Naphthalene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	8.65	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	8.79
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	8.74	9.42	8.46	9.86
29517-005		8.52	8.43	8.36	8.83	8.36
29517-006		9.14	9.06	8.68	9.36	9.21
59517-007		8.4	8.64	8.77	9.47	9.34
29517-008		8.88	9.01	9.38	8.43	9.17
Phenanthrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	9.37	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		8.88	9.42	8.71	9.73	13.1
29517-003		9.42	9.09	8.47	9.92	9.38
29517-004		8.46	9.23	9.42	13	9.86
29517-005		9.22	9.83	9.12	14.2	8.36
29517-006		23.1	16.4	21.4	23.8	15.6
59517-007		18.7	16.9	17.1	14.4	14.5
29517-008		20.8	23.8	19.9	20.6	25.8
Pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	9.65	9.01	9.06	14.6	9.4
29517-001		8.88	8.46	8.74	9.52	9.34
29517-002		19.5	20.6	17.5	24.4	36.8
29517-003		9.42	10	12.8	12.6	11.4
29517-004		54.8	59.8	41	87.3	73.3
29517-005		33.9	33.9	37.5	50.2	32
29517-006		68.4	56	67.3	80.5	52.8
59517-007		74.4	60.1	58.6	50	46.6
29517-008		72.5	79.3	74.6	65.8	77.8

CETIS Analytical Report

Report Date: 14 Nov-17 14:35 (p 1 of 131)
 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-9515-5409		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed acenaphthene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-2779-6796		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed acenaphthene			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-9634-6984		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed acenaphthene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-4803-7441		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed acenaphthene			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect		
Error		2.1562		0.269525		8					
Total		2.22509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-7594-0287		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed acenaphthene				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.06929		1.06929		1	11.5	0.0095	Significant Effect			
Error	0.74352		0.09294		8						
Total	1.81281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-6488-0173		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed acenaphthene				9.58%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.738	1.86	0.877	8	CDF	0.2409	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.41	2.29	0.0191	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.30276		0.30276		1	0.544	0.4817	Non-Significant Effect		
Error		4.4498		0.556225		8					
Total		4.75256				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.54	23.2	0.0962	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.852	0.741	0.0606	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.5	8.28	10.7		8.68	11.2	0.439	10.34%	-3.80%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		11.2	9.06	8.68	9.36	9.21					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-8756-6940		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed acenaphthene				4.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.328	1.89	0.442	7	CDF	0.6238	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0130049		0.0130049		1	0.108	0.7525	Non-Significant Effect			
Error	0.845794		0.120828		7						
Total	0.858799				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.73	46.2	0.6803	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.701	0.9323	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		4	9.08	8.61	9.54		8.68	9.36	0.146	3.22%	0.84%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		Outlier	9.06	8.68	9.36	9.21					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-9249-4977		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed acenaphthene			11.38%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.732	1.86	1.04	8	CDF	0.2426	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.44	2.29	0.0155	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.420251		0.420251		1	0.535	0.4852	Non-Significant Effect			
Error	6.27864		0.78483		8						
Total	6.69889				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				9.64	23.2	0.0497	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.843	0.741	0.0486	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	9.56	8.08	11		8.64	11.6	0.533	12.47%	-4.48%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		11.6	8.64	8.77	9.47	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-1527-6389		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed acenaphthene				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution				
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-0457-5701			Endpoint: Acenaphthylene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed acenaphthylene			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-8534-1696		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed acenaphthylene			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-3716-4424		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed acenaphthylene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect		
Error		1.71864		0.21483		8					
Total		1.74465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-7059-8276		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed acenaphthylene				6.67%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect			
Error	2.1562		0.269525		8						
Total	2.22509				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.65	23.2	0.3674	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.913	0.741	0.3050	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-9861-2043		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed acenaphthylene			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.06929		1.06929		1	11.5	0.0095	Significant Effect			
Error	0.74352		0.09294		8						
Total	1.81281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-6098-6597		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed acenaphthylene				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.383	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0102399		0.0102399		1	0.0965	0.7640	Non-Significant Effect			
Error	0.848919		0.106115		8						
Total	0.859159				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution				
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.09	8.77	9.41		8.68	9.36	0.114	2.80%	0.70%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	8.68	9.36	9.21					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-3350-6410		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed acenaphthylene			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.499	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.13225		0.13225		1	0.735	0.4163	Non-Significant Effect			
Error	1.44024		0.18003		8						
Total	1.57249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.92	8.35	9.5		8.4	9.47	0.206	5.17%	2.51%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-9641-8777		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed acenaphthylene				4.76%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-8991-8554		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed anthracene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution				
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-8137-9676			Endpoint: Anthracene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed anthracene				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-5458-9354		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed anthracene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect		
Error		1.71864		0.21483		8					
Total		1.74465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-0122-7028		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed anthracene			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect			
Error	2.1562		0.269525		8						
Total	2.22509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.65	23.2	0.3674		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050		Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-5066-6347		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed anthracene				3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.06929		1.06929		1	11.5	0.0095	Significant Effect		
Error		0.74352		0.09294		8					
Total		1.81281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-2549-6482		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed anthracene				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.383	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0102399		0.0102399		1	0.0965	0.7640	Non-Significant Effect		
Error		0.848919		0.106115		8					
Total		0.859159				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.09	8.77	9.41		8.68	9.36	0.114	2.80%	0.70%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	8.68	9.36	9.21					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-8899-1779		Endpoint: Anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed anthracene				5.45%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.499	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.13225		0.13225		1	0.735	0.4163	Non-Significant Effect			
Error	1.44024		0.18003		8						
Total	1.57249				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.44	23.2	0.7322	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.909	0.741	0.2722	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.92	8.35	9.5		8.4	9.47	0.206	5.17%	2.51%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-3037-5802		Endpoint: Anthracene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29517-008 passed anthracene				4.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.56	2.29	1.0000	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.16	23.2	0.8900	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.947	0.741	0.6346	Normal Distribution					
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-9626-6928		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed benzo(a)anthracene				32.43%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	35	n/a	0	8	Exact	0.9524	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.67	2.29	6.6E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		12.4992		12.4992		1	1.31	0.2863	Non-Significant Effect		
Error		76.6142		9.57677		8					
Total		89.1134				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			100	23.2	5.8E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.691	0.741	6.9E-04	Non-Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	19.92%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-0814-4420			Endpoint: Benzo(a)anthracene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33			Analysis: Nonparametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed benzo(a)anthracene			37.76%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	22	n/a	0	7	Exact	0.7222	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.62401		6.62401		1	0.596	0.4655	Non-Significant Effect			
Error	77.8438		11.1205		7						
Total	84.4678				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				28.6	46.2	0.0201	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.704	0.701	0.0016	Non-Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-002		4	9.5	8.2	10.8		8.71	10.2	0.407	8.57%	15.38%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-002		8.88	10.2	8.71	10.2	Outlier					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-6304-1167		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-003	Marine Sediment		New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed benzo(a)anthracene				25.90%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	1.74	2.13	2.4	4	CDF	0.0787	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	8.51948		8.51948		1	2.36	0.1682	Non-Significant Effect			
Error	25.2447		3.60638		7						
Total	33.7642				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				68.7	46.2	0.0056	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.848	0.701	0.0712	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	9.28	8.8	9.76		9.01	9.65	0.151	3.25%	0.00%
29517-003		5	11.2	8.14	14.3		9.42	15.3	1.12	22.23%	-21.10%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	Outlier	9.4					
29517-003		9.42	12	9.55	9.92	15.3					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-8287-1898		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 failed benzo(a)anthracene				62.38%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	6.65	1.86	7	8	CDF	8.0E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.71	2.29	0.6685		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1569.51		1569.51		1	44.3	1.6E-04	Significant Effect			
Error	283.523		35.4404		8						
Total	1853.03				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.74	23.2	0.3529		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3004		Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-004		5	36.3	27.3	45.2		26.7	44	3.22	19.86%	-223.24%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-004		31.7	36.8	26.7	42.2	44					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-7792-2123			Endpoint: Benzo(a)anthracene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34			Analysis: Nonparametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(a)anthracene			40.34%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.14	2.29	0.1200	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		467.582		467.582		1	31.5	5.0E-04	Significant Effect		
Error		118.595		14.8244		8					
Total		586.178				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.77	23.2	0.5920	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.779	0.741	0.0080	Non-Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-005		5	24.9	20.8	29		21.9	30	1.46	13.13%	-121.85%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-005		21.9	25.8	24.5	30	22.3					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-3988-3158		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 failed benzo(a)anthracene				53.52%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	8.85	1.86	6.01	8	CDF	1.1E-05	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.61	2.29	0.8712	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2041.47		2041.47		1	78.3	2.1E-05	Significant Effect		
Error		208.675		26.0844		8					
Total		2250.14				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.75	23.2	0.6007	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.926	0.741	0.4114	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-006		5	39.8	32.6	47		33	47	2.58	14.48%	-254.60%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-006		41.5	34.9	42.6	47	33					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-3278-6524		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(a)anthracene			56.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	7.32	1.86	6.37	8	CDF	4.1E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.04	2.29	0.1998	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1572.01		1572.01		1	53.6	8.2E-05	Significant Effect			
Error	234.715		29.3394		8						
Total	1806.73				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.09	23.2	0.4917	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.794	0.741	0.0124	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
59517-007		5	36.3	28.5	44.1		30	46.7	2.82	17.36%	-223.41%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
59517-007		46.7	36.8	33.7	34.3	30					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-4800-7414		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed benzo(a)anthracene			48.85%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	9.31	1.86	5.48	8	CDF	7.2E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5501	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1881.84		1881.84		1	86.6	1.4E-05	Significant Effect			
Error	173.847		21.7309		8						
Total	2055.68				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8100	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.845	0.741	0.0504	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.2	5.82	16.6		9.01	19	1.95	38.80%	0.00%
29517-008		5	38.7	32.5	44.8		32.6	45.7	2.21	12.80%	-244.44%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	19	9.4					
29517-008		37.6	45.7	36.4	32.6	41					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-6853-4667		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed benzo(a)pyrene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect		
Error		1.349		0.168625		8					
Total		1.41789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-9355-4713		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed benzo(a)pyrene				5.43%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.457	1.86	0.497	8	CDF	0.3300	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.42	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0372101	0.0372101		1	0.209	0.6600	Non-Significant Effect			
Error		1.42664	0.17833		8						
Total		1.46385			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.42	23.2	0.7435	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.919	0.741	0.3454	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.28	8.71	9.84		8.71	9.73	0.205	4.93%	-1.33%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	9.64					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-1685-8812		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed benzo(a)pyrene				5.95%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect		
Error		1.71864		0.21483		8					
Total		1.74465				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-6734-3713		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 failed benzo(a)pyrene				51.13%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	3.19	2.13	4.68	4	CDF	0.0166	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.06	2.29	0.1791	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	122.85		122.85		1	10.2	0.0128	Significant Effect			
Error	96.412		12.0515		8						
Total	219.262				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				162	23.2	2.2E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.906	0.741	0.2524	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	16.2	10.1	22.2		9.42	21.5	2.19	30.28%	-76.58%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		13.5	16.4	9.42	20	21.5					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-8449-9241		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed benzo(a)pyrene				4.10%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.49	1.89	0.375	7	CDF	0.9949	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.0626		1.0626		1	12.2	0.0101	Significant Effect			
Error	0.610995		0.087285		7						
Total	1.6736				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				21.2	46.2	0.0309	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.958	0.701	0.7810	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		4	8.46	8.33	8.6		8.36	8.54	0.0417	0.99%	7.55%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.54	Outlier	8.36					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-7899-3430		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(a)pyrene			27.62%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.88	2.13	2.53	4	CDF	0.0041	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.89	2.29	0.3631	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	83.6945		83.6945		1	23.8	0.0012	Significant Effect			
Error	28.1221		3.51526		8						
Total	111.817				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				46.7	23.2	0.0026	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.956	0.741	0.7355	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	14.9	11.7	18.2		11.6	17.6	1.17	17.56%	-63.21%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		17.6	12.7	16.5	16.3	11.6					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-0817-6730			Endpoint: Benzo(a)pyrene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed benzo(a)pyrene				26.11%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.6	2.13	2.39	4	CDF	0.0301	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1851		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	21.2285		21.2285		1	6.75	0.0317	Significant Effect			
Error	25.1426		3.14282		8						
Total	46.3711				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			41.6	23.2	0.0033		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.924	0.741	0.3907		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	12.1	8.99	15.1		9.34	15.5	1.11	20.53%	-31.83%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		15.5	13	12.5	10	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-4461-0143		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed benzo(a)pyrene			4.36%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	7.81	1.89	0.399	7	CDF	5.3E-05	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.0207		6.0207		1	61.1	1.1E-04	Significant Effect			
Error	0.69012		0.0985885		7						
Total	6.71082				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.43	46.2	0.2518	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.701	0.9371	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		4	10.8	10.5	11.1		10.6	11	0.0913	1.69%	-17.98%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		10.9	Outlier	10.7	10.6	11					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9593-5742			Endpoint: Benzo(b)fluoranthene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed benzo(b)fluoranthene				5.26%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.13	1.89	0.488	7	CDF	0.8529	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.189475		0.189475		1	1.29	0.2942	Non-Significant Effect			
Error	1.03148		0.147354		7						
Total	1.22096				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.09	46.2	0.5716	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.936	0.701	0.5439	Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	9.28	8.8	9.76		9.01	9.65	0.151	3.25%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	3.15%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	Outlier	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-0406-4428		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed benzo(b)fluoranthene			25.74%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	28	n/a	0	8	Exact	0.5794	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.47	2.29	0.0116	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.10224		1.10224		1	0.241	0.6364	Non-Significant Effect		
Error		36.5296		4.5662		8					
Total		37.6318				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.37	23.2	0.1005	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.747	0.741	0.0033	Non-Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
29517-002		5	10.4	6.94	13.9		8.71	15.4	1.26	26.94%	-6.80%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
29517-002		8.88	9.42	8.71	9.73	15.4					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-8784-8246		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 passed benzo(b)fluoranthene			6.13%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.08	1.89	0.569	7	CDF	0.5307	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00128		0.00128		1	0.00639	0.9385	Non-Significant Effect			
Error	1.40112		0.20016		7						
Total	1.4024				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.1	46.2	0.3790	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.968	0.701	0.8799	Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	9.28	8.8	9.76		9.01	9.65	0.151	3.25%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	0.26%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	Outlier	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-7623-5597		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed benzo(b)fluoranthene			66.84%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	4.92	2.13	6.53	4	CDF	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.13	2.29	0.1277		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	566.708		566.708		1	24.2	0.0012	Significant Effect			
Error	187.426		23.4282		8						
Total	754.134				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			36.8	23.2	0.0041		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.923	0.741	0.3804		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
29517-004		5	24.8	16.4	33.2		15.1	31.4	3.02	27.21%	-154.20%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
29517-004		21.3	25.9	15.1	30.4	31.4					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-4387-9109		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(b)fluoranthene			16.61%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1131		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	68.5392		68.5392		1	36	3.2E-04	Significant Effect			
Error	15.2177		1.90221		8						
Total	83.757				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.07	23.2	0.4985		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.75	0.741	0.0036		Non-Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
29517-005		5	15	13	17		13.9	17.8	0.716	10.68%	-53.63%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
29517-005		13.9	14.4	14.8	17.8	14.1					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-4812-1210		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 failed benzo(b)fluoranthene				28.82%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	10.5	1.86	2.81	8	CDF	2.9E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.61	2.29	0.8739	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	631.707		631.707		1	110	5.9E-06	Significant Effect			
Error	45.7897		5.72371		8						
Total	677.497				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.24	23.2	0.0653	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.955	0.741	0.7247	Normal Distribution				
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
29517-006		5	25.7	21.7	29.6		22.1	29.3	1.43	12.45%	-162.80%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
29517-006		27.5	22.5	26.9	29.3	22.1					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-9055-5743		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(b)fluoranthene			45.84%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	5.66	1.86	4.48	8	CDF	2.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1394		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	463.489		463.489		1	32	4.8E-04	Significant Effect			
Error	115.846		14.4807		8						
Total	579.334				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			22.4	23.2	0.0107		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2544		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
59517-007		5	23.4	16.8	29.9		15.8	30.1	2.35	22.52%	-139.45%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
59517-007		30.1	25.6	23.8	21.6	15.8					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-3497-9679		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed benzo(b)fluoranthene			30.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	7.45	1.86	2.99	8	CDF	3.6E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.85	2.29	0.4197		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	359.76		359.76		1	55.5	7.3E-05	Significant Effect			
Error	51.8697		6.48372		8						
Total	411.63				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			9.46	23.2	0.0513		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.944	0.741	0.6031		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.76	8.38	11.1		9.01	11.7	0.498	11.40%	0.00%
29517-008		5	21.8	17.5	26		18.3	26.2	1.53	15.74%	-122.86%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	11.7	9.4					
29517-008		21.9	26.2	18.5	18.3	23.9					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6508-1143		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed benzo(g,h,i)perylene				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-4984-3120		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed benzo(g,h,i)perylene			5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-1137-3709		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed benzo(g,h,i)perylene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-3671-6446		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed benzo(g,h,i)perylene				9.16%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.776	1.86	0.838	8	CDF	0.2300	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.55	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.30625		0.30625		1	0.603	0.4599	Non-Significant Effect			
Error	4.06564		0.508205		8						
Total	4.37189				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				5.89	23.2	0.1142	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.963	0.741	0.8239	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	9.5	8.35	10.7		8.46	10.5	0.417	9.81%	-3.82%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	10.4	10.5					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-7825-4816		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed benzo(g,h,i)perylene				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.06929		1.06929		1	11.5	0.0095	Significant Effect		
Error		0.74352		0.09294		8					
Total		1.81281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-1171-4918		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed benzo(g,h,i)perylene				7.82%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.997	1.86	0.716	8	CDF	0.1739	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.37	2.29	0.0272	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.36864		0.36864		1	0.995	0.3478	Non-Significant Effect			
Error	2.9646		0.370575		8						
Total	3.33324				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.02	23.2	0.2062	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.819	0.741	0.0247	Normal Distribution				
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.54	8.58	10.5		9.06	10.9	0.345	8.08%	-4.19%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	9.38	10.9	9.21					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-8996-7419		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed benzo(g,h,i)perylene			4.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.661	1.86	0.45	8	CDF	0.7364	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.4	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0639997		0.0639997		1	0.437	0.5271	Non-Significant Effect			
Error	1.17144		0.14643		8						
Total	1.23544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.02	23.2	0.9887	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.911	0.741	0.2867	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.99	8.52	9.47		8.64	9.47	0.17	4.24%	1.75%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.75	8.64	8.77	9.47	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-8740-1125		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed benzo(g,h,i)perylene				4.76%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-0490-8675		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed benzo(k)fluoranthene			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect		
Error		1.349		0.168625		8					
Total		1.41789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-4905-2854		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed benzo(k)fluoranthene			5.10%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.143	1.86	0.467	8	CDF	0.4448	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.44	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0032400		0.0032400		1	0.0205	0.8896	Non-Significant Effect			
Error	1.26152		0.15769		8						
Total	1.26476				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.14	23.2	0.9035	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.941	0.741	0.5675	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.19	8.68	9.7		8.71	9.73	0.183	4.46%	-0.39%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	9.21					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-6804-5974		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed benzo(k)fluoranthene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-0045-7303		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 failed benzo(k)fluoranthene				39.00%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	3.38	2.13	3.57	4	CDF	0.0139	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1846	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		80.2022		80.2022		1	11.4	0.0096	Significant Effect		
Error		56.1006		7.01258		8					
Total		136.303				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			94.1	23.2	6.6E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6338	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	14.8	10.2	19.4		9.69	18.7	1.67	25.14%	-61.87%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		12.3	16.1	9.69	17.3	18.7					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-2706-2427		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed benzo(k)fluoranthene			6.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-0.972	1.86	0.62	8	CDF	0.8203	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1853	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.26244		0.26244		1	0.945	0.3594	Non-Significant Effect		
Error		2.22132		0.277665		8					
Total		2.48376				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.76	23.2	0.3485	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.9	0.741	0.2190	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.83	8.04	9.62		8.36	9.85	0.286	7.23%	3.54%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	9.06	8.36	9.85	8.36					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-9805-4327			Endpoint: Benzo(k)fluoranthene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(k)fluoranthene			22.11%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	3.03	2.13	2.02	4	CDF	0.0194	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.03	2.29	0.2060	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	20.6497		20.6497		1	9.17	0.0164	Significant Effect			
Error	18.0218		2.25272		8						
Total	38.6715				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				29.5	23.2	0.0063	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4553	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	12	9.44	14.6		9.34	14.9	0.934	17.36%	-31.40%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		13.1	11.5	11.3	14.9	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-8296-6415		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(k)fluoranthene			9.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.61	1.86	0.845	8	CDF	0.0155	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.15	2.29	0.1143	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.52836		3.52836		1	6.83	0.0310	Significant Effect			
Error	4.1338		0.516725		8						
Total	7.66216				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.01	23.2	0.1106	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.944	0.741	0.6027	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	10.3	9.17	11.5		9.34	11.8	0.421	9.10%	-12.98%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		11.8	10.6	10.2	9.77	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-2403-4562		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 failed benzo(k)fluoranthene				13.87%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.63	1.86	1.27	8	CDF	0.0151	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.91	2.29	0.3411	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	8.06404		8.06404		1	6.92	0.0301	Significant Effect			
Error	9.32132		1.16516		8						
Total	17.3854				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				14.8	23.2	0.0230	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.961	0.741	0.7996	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	11	9.12	12.8		9.01	12.4	0.661	13.49%	-19.62%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		11.1	12.3	12.4	9.01	9.94					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-4267-3141		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed chrysene			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.37	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8133		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.92	0.741	0.3587		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-3461-0374		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed chrysene			31.55%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	24	n/a	0	8	Exact	0.2738	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.63	2.29	0.0012		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.78976		6.78976		1	1.13	0.3197	Non-Significant Effect			
Error	48.249		6.03112		8						
Total	55.0388				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			80.8	23.2	8.9E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.729	0.741	0.0020		Non-Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	10.8	6.52	15.1		8.71	16.9	1.54	31.95%	-18.00%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	10.1	16.9					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-6891-0016		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed chrysene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-6121-4354		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed chrysene				85.87%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	5.36	2.13	7.86	4	CDF	0.0029	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.13	2.29	0.1286		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	974.761		974.761		1	28.7	6.8E-04	Significant Effect			
Error	271.91		33.9888		8						
Total	1246.67				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			460	23.2	2.8E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.887	0.741	0.1581		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	28.9	18.7	39.1		17.2	37.7	3.68	28.50%	-215.71%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		24.8	29.6	17.2	35.2	37.7					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-8323-7882		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed chrysene			30.46%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.51	2.29	0.0078		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	195.629		195.629		1	34.8	3.6E-04	Significant Effect			
Error	44.9701		5.62127		8						
Total	240.599				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			75.2	23.2	0.0010		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.784	0.741	0.0092		Non-Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	18	13.9	22.1		15.4	23.6	1.49	18.51%	-96.64%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		15.6	17.3	18.1	23.6	15.4					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-6851-1792		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed chrysene			59.48%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	9.82	2.13	5.44	4	CDF	3.0E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.22	2.29	0.0792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1573.27		1573.27		1	96.5	9.7E-06	Significant Effect		
Error		130.442		16.3053		8					
Total		1703.71				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			220	23.2	1.2E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.863	0.741	0.0833	Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	34.2	27.2	41.3		25.8	39.4	2.55	16.64%	-274.04%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		39.3	31.8	34.9	39.4	25.8					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9502-1458		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed chrysene			53.14%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	8.54	2.13	4.86	4	CDF	5.2E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.22	2.29	0.0766		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	949.261		949.261		1	72.9	2.7E-05	Significant Effect			
Error	104.122		13.0153		8						
Total	1053.38				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			175	23.2	1.9E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.851	0.741	0.0600		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	28.6	22.3	35		22.7	36.2	2.28	17.76%	-212.87%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		36.2	29.6	29.2	25.5	22.7					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9801-6006		Endpoint: Chrysene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed chrysene			29.07%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	15.4	2.13	2.66	4	CDF	5.2E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.22	2.29	0.0756		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	922.176		922.176		1	237	3.2E-07	Significant Effect			
Error	31.1621		3.89526		8						
Total	953.338				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			51.8	23.2	0.0021		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.929	0.741	0.4368		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	28.4	24.9	31.8		25.7	32.5	1.24	9.75%	-209.81%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		26.8	32.5	29.8	27	25.7					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-8624-8798		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed dibenz(a,h)anthracene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect		
Error		1.349		0.168625		8					
Total		1.41789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-5869-5271		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed dibenz(a,h)anthracene				5.35%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect		
Error		1.38584		0.17323		8					
Total		1.3916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-6783-6994		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed dibenz(a,h)anthracene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.8	2.29	0.4996	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.91	23.2	0.5455	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9463	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-4831-3854		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed dibenz(a,h)anthracene			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect		
Error		2.1562		0.269525		8					
Total		2.22509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-4889-0797		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed dibenz(a,h)anthracene				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.06929		1.06929		1	11.5	0.0095	Significant Effect			
Error	0.74352		0.09294		8						
Total	1.81281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6423-3203		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed dibenz(a,h)anthracene				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.383	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0102399		0.0102399		1	0.0965	0.7640	Non-Significant Effect		
Error		0.848919		0.106115		8					
Total		0.859159				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.09	8.77	9.41		8.68	9.36	0.114	2.80%	0.70%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	8.68	9.36	9.21					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-0173-9061		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed dibenz(a,h)anthracene				5.45%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.499	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.13225		0.13225		1	0.735	0.4163	Non-Significant Effect		
Error		1.44024		0.18003		8					
Total		1.57249				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.92	8.35	9.5		8.4	9.47	0.206	5.17%	2.51%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	9.34					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-0304-2249		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed dibenz(a,h)anthracene			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-9428-5176		Endpoint: Fluoranthene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed fluoranthene				16.38%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	35	n/a	0	8	Exact	0.9524	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.6	2.29	0.0024	Outlier Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.34084		3.34084		1	1.67	0.2318	Non-Significant Effect			
Error	15.9614		1.99518		8						
Total	19.3022				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		20	23.2	0.0131	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.751	0.741	0.0036	Non-Normal Distribution					
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	11.40%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9260-8810		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed fluoranthene			66.36%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	3.69	1.86	6.73	8	CDF	0.0031	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.48	2.29	0.0099	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		445.957		445.957		1	13.6	0.0061	Significant Effect		
Error		262.103		32.7628		8					
Total		708.059				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			16.2	23.2	0.0194	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.812	0.741	0.0202	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-002		5	23.5	13.7	33.3		16.8	36.9	3.51	33.43%	-131.66%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-002		20.2	20.1	16.8	23.5	36.9					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-8651-4021		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed fluoranthene				21.91%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	1.36	1.86	2.22	8	CDF	0.1061	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.94	2.29	0.2994	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.561		6.561		1	1.84	0.2122	Non-Significant Effect			
Error	28.5604		3.57006		8						
Total	35.1214				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.14	23.2	0.9033	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.939	0.741	0.5443	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-003		5	11.8	9.49	14		9.42	13.5	0.817	15.53%	-15.97%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-003		9.42	10.2	13	12.7	13.5					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-9876-3152		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed fluoranthene			150.87%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	6.43	2.13	15.3	4	CDF	0.0015	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.95	2.29	0.2865	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5330.56		5330.56		1	41.4	2.0E-04	Significant Effect			
Error	1030.71		128.839		8						
Total	6361.27				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			66.8	23.2	0.0013	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.923	0.741	0.3820	Normal Distribution				
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-004		5	56.3	36.5	76.1		35.9	77.2	7.13	28.29%	-455.21%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-004		46.6	57.4	35.9	77.2	64.5					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-6922-2007		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed fluoranthene				28.86%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	18.5	1.89	2.93	7	CDF	1.7E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1805.76		1805.76		1	340	3.4E-07	Significant Effect			
Error	37.1325		5.30465		7						
Total	1842.89				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.92	24.3	0.5348	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.899	0.701	0.2478	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-005		4	38.7	34.3	43		35.7	41.7	1.35	7.00%	-281.01%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-005		37.2	40	41.7	Outlier	35.7					

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 Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-0314-9022		Endpoint: Fluoranthene				CETIS Version: CETISv1.9.3					
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 failed fluoranthene				117.22%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	11.9	2.13	11.9	4	CDF	1.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.94	2.29	0.2982		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	10994.5		10994.5		1	141	2.3E-06	Significant Effect			
Error	622.235		77.7793		8						
Total	11616.8				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			39.9	23.2	0.0035		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.936	0.741	0.5045		Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-006		5	76.5	61.2	91.8		62.3	92.6	5.51	16.11%	-653.75%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-006		82.4	66.2	78.8	92.6	62.3					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-9245-9539		Endpoint: Fluoranthene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed fluoranthene				118.95%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	10.5	2.13	12.1	4	CDF	2.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test		2.35		2.29	0.0322		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	8766.34		8766.34		1	109	6.1E-06	Significant Effect			
Error	640.694		80.0868		8						
Total	9407.03				9						
Distributional Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test		41.1		23.2	0.0033		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test		0.839		0.741	0.0425		Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
59517-007		5	69.4	53.8	84.9		56.9	89.2	5.59	18.03%	-583.75%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
59517-007		89.2	71.1	68.8	60.8	56.9					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-8463-8045		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Untransformed		C < T			59517-007 failed fluoranthene					57.74%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	17.6	1.89	5.86	7	CDF	2.4E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6541.59		6541.59		1	308	4.8E-07	Significant Effect			
Error	148.663		21.2375		7						
Total	6690.25				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				11.7	24.3	0.0379	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.956	0.701	0.7513	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
59517-007		4	64.4	53.8	75		56.9	71.1	3.33	10.36%	-534.86%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
59517-007		Outlier	71.1	68.8	60.8	56.9					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-0117-7362		Endpoint: Fluoranthene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed fluoranthene				59.01%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	25.5	1.86	5.99	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test		1.92		2.29	0.3270		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	16874		16874		1	651	<1.0E-37	Significant Effect			
Error	207.222		25.9028		8						
Total	17081.2				9						
Distributional Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test		12.6		23.2	0.0307		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test		0.965		0.741	0.8406		Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.1	7.72	12.6		9.01	13.6	0.872	19.22%	0.00%
29517-008		5	92.3	83.7	101		83.1	99.7	3.1	7.51%	-809.90%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	13.6	9.4					
29517-008		87.3	99.7	94.2	83.1	97.2					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-6802-8294		Endpoint: Fluorene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed fluorene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect		
Error		1.349		0.168625		8					
Total		1.41789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-0670-9540		Endpoint: Fluorene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed fluorene				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.35	23.2	0.7791		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532		Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-7290-5171		Endpoint: Fluorene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed fluorene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-3189-0067		Endpoint: Fluorene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed fluorene				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect		
Error		2.1562		0.269525		8					
Total		2.22509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-2347-9163		Endpoint: Fluorene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed fluorene				3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.75	2.29	0.5786	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.06929		1.06929		1	11.5	0.0095	Significant Effect			
Error	0.74352		0.09294		8						
Total	1.81281				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		3.85	23.2	0.2203	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.933	0.741	0.4805	Normal Distribution					
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-4482-3711		Endpoint: Fluorene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed fluorene				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.383	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0102399		0.0102399		1	0.0965	0.7640	Non-Significant Effect		
Error		0.848919		0.106115		8					
Total		0.859159				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.09	8.77	9.41		8.68	9.36	0.114	2.80%	0.70%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	8.68	9.36	9.21					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-2480-7162		Endpoint: Fluorene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed fluorene				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.499	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.13225		0.13225		1	0.735	0.4163	Non-Significant Effect			
Error	1.44024		0.18003		8						
Total	1.57249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.92	8.35	9.5		8.4	9.47	0.206	5.17%	2.51%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-4222-9425		Endpoint: Fluorene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed fluorene			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect		
Error		1.09944		0.13743		8					
Total		1.18044				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-9254-9506		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed indeno(1,2,3-cd)pyrene			5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect		
Error		1.349		0.168625		8					
Total		1.41789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-0356-2574		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed indeno(1,2,3-cd)pyrene			11.90%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	15.6	1.86	1.09	8	CDF	1.4E-07	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.97	2.29	0.2651	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	208.21		208.21		1	243	2.9E-07	Significant Effect			
Error	6.85812		0.857265		8						
Total	215.068				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				10.6	23.2	0.0419	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.949	0.741	0.6608	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	18.3	16.7	19.8		17.1	20	0.56	6.85%	-99.69%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		17.1	18.2	17.1	19	20					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-2503-9784		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed indeno(1,2,3-cd)pyrene			8.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	20.3	1.89	0.743	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	140.309		140.309		1	411	1.8E-07	Significant Effect			
Error	2.39012		0.341446		7						
Total	142.699				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.07	24.3	0.2088	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.992	0.701	0.9983	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		4	17.1	15.9	18.3		16.2	18	0.387	4.53%	-86.80%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		16.8	Outlier	16.2	18	17.4					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-3588-9906		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed indeno(1,2,3-cd)pyrene			26.72%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	11.1	2.13	2.45	4	CDF	1.9E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1365	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	404.878		404.878		1	123	3.9E-06	Significant Effect			
Error	26.3181		3.28976		8						
Total	431.196				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				43.6	23.2	0.0030	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.926	0.741	0.4066	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	21.9	18.7	25		19.2	25.5	1.13	11.59%	-139.02%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		19.9	21.7	19.2	23.1	25.5					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-7064-5030		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed indeno(1,2,3-cd)pyrene			7.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.1	1.86	0.669	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.24	2.29	0.0703		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	237.461		237.461		1	733	<1.0E-37	Significant Effect			
Error	2.59012		0.323765		8						
Total	240.051				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.39	23.2	0.2641		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.9	0.741	0.2184		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	18.9	18	19.8		18.3	20.1	0.316	3.74%	-106.47%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		18.3	18.9	18.7	20.1	18.5					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-3289-3734		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed indeno(1,2,3-cd)pyrene				4.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.328	1.89	0.442	7	CDF	0.6238	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0130049		0.0130049		1	0.108	0.7525	Non-Significant Effect			
Error	0.845794		0.120828		7						
Total	0.858799				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.73	46.2	0.6803	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.701	0.9323	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		4	9.08	8.61	9.54		8.68	9.36	0.146	3.22%	0.84%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		Outlier	9.06	8.68	9.36	9.21					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-0582-4791		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Untransformed		C < T			59517-007 passed indeno(1,2,3-cd)pyrene					5.81%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-1.19	1.89	0.531	7	CDF	0.8637	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.247902		0.247902		1	1.42	0.2726	Non-Significant Effect			
Error	1.22392		0.174846		7						
Total	1.47182				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.43	24.3	0.7157	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.935	0.701	0.5298	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		4	8.82	8.09	9.55		8.4	9.47	0.23	5.21%	3.65%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	Outlier					

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Test Code: 29524Mn-PAH | 20-8923-9275

Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-7275-1878		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed indeno(1,2,3-cd)pyrene			58.88%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.41	2.13	5.39	4	CDF	0.0370	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.65	2.29	0.7853	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	92.4768		92.4768		1	5.79	0.0428	Significant Effect			
Error	127.841		15.9801		8						
Total	220.317				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				216	23.2	1.3E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.877	0.741	0.1215	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	15.2	8.23	22.2		9.01	19.9	2.52	37.02%	-66.44%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		19.7	9.01	19.9	18.4	9.17					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-6900-0045		Endpoint: Naphthalene		CETIS Version: CETISv1.9.3							
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29517-001 passed naphthalene				5.28%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.483	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.37	2.29	1.0000	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0688898		0.0688898		1	0.409	0.5406	Non-Significant Effect			
Error	1.349		0.168625		8						
Total	1.41789				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.29	23.2	0.8133	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.92	0.741	0.3587	Normal Distribution					
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	1.81%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-6686-9220		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed naphthalene				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.489	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00576		0.00576		1	0.0333	0.8598	Non-Significant Effect			
Error	1.38584		0.17323		8						
Total	1.3916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution				
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-002		5	9.11	8.55	9.66		8.71	9.73	0.199	4.90%	0.52%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-002		8.88	9.42	8.71	9.73	8.79					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-2907-0969		Endpoint: Naphthalene				CETIS Version: CETISv1.9.3					
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 passed naphthalene			5.95%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.545	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0260101		0.0260101		1	0.121	0.7369	Non-Significant Effect			
Error	1.71864		0.21483		8						
Total	1.74465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution				
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	-1.11%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-8260-8490		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed naphthalene			6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.611	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.06889		0.06889		1	0.256	0.6268	Non-Significant Effect		
Error		2.1562		0.269525		8					
Total		2.22509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-004		5	8.99	8.21	9.76		8.46	9.86	0.28	6.96%	1.81%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-004		8.46	8.74	9.42	8.46	9.86					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-3902-2578		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed naphthalene			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.359	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.06929		1.06929		1	11.5	0.0095	Significant Effect		
Error		0.74352		0.09294		8					
Total		1.81281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-005		5	8.5	8.26	8.74		8.36	8.83	0.0876	2.30%	7.14%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-005		8.52	8.43	8.36	8.83	8.36					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-8886-0995		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed naphthalene				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.383	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0102399		0.0102399		1	0.0965	0.7640	Non-Significant Effect		
Error		0.848919		0.106115		8					
Total		0.859159				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-006		5	9.09	8.77	9.41		8.68	9.36	0.114	2.80%	0.70%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-006		9.14	9.06	8.68	9.36	9.21					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-6944-0917		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed naphthalene			5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.499	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.13225		0.13225		1	0.735	0.4163	Non-Significant Effect		
Error		1.44024		0.18003		8					
Total		1.57249				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
59517-007		5	8.92	8.35	9.5		8.4	9.47	0.206	5.17%	2.51%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
59517-007		8.4	8.64	8.77	9.47	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9697-9453		Endpoint: Naphthalene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed naphthalene				4.76%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.436	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0809998		0.0809998		1	0.589	0.4647	Non-Significant Effect			
Error	1.09944		0.13743		8						
Total	1.18044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.15	8.68	9.63		8.65	9.65	0.172	4.20%	0.00%
29517-008		5	8.97	8.53	9.42		8.43	9.38	0.16	3.98%	1.97%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	8.65	9.4					
29517-008		8.88	9.01	9.38	8.43	9.17					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-1712-5598		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed phenanthrene				4.56%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.36	1.86	0.424	8	CDF	0.8947	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.57	2.29	0.9920	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.24025		0.24025		1	1.85	0.2107	Non-Significant Effect			
Error	1.03796		0.129745		8						
Total	1.27821				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.72	23.2	0.3560	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.956	0.741	0.7421	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	3.33%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-5061-1957		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed phenanthrene			16.25%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	26	n/a	0	8	Exact	0.4206	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.59	2.29	0.0028	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.12225		1.12225		1	0.68	0.4336	Non-Significant Effect		
Error		13.2118		1.65147		8					
Total		14.334				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			46.3	23.2	0.0026	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.763	0.741	0.0052	Non-Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-002		5	9.97	7.74	12.2		8.71	13.1	0.804	18.04%	-7.21%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-002		8.88	9.42	8.71	9.73	13.1					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-4209-7990		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed phenanthrene			5.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	-0.158	1.86	0.493	8	CDF	0.5609	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.99	2.29	0.2469	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00441		0.00441		1	0.0251	0.8781	Non-Significant Effect			
Error	1.4076		0.17595		8						
Total	1.41201				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.04	23.2	0.2047	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.965	0.741	0.8398	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-003		5	9.26	8.6	9.92		8.47	9.92	0.238	5.74%	0.45%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-003		9.42	9.09	8.47	9.92	9.38					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-6471-4737		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed phenanthrene				5.90%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.192	1.89	0.549	7	CDF	0.5733	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0068450		0.0068450		1	0.0367	0.8534	Non-Significant Effect			
Error	1.30435		0.186336		7						
Total	1.3112				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.9	24.3	0.1589	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.97	0.701	0.8958	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-004		4	9.24	8.31	10.2		8.46	9.86	0.292	6.33%	0.60%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-004		8.46	9.23	9.42	Outlier	9.86					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-9541-5648		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed phenanthrene				20.93%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	26	n/a	0	8	Exact	0.4206	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.6	2.29	0.0023	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.79776		1.79776		1	0.656	0.4413	Non-Significant Effect		
Error		21.9138		2.73922		8					
Total		23.7116				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			77.5	23.2	9.6E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.757	0.741	0.0044	Non-Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-005		5	10.1	7.26	13		8.36	14.2	1.04	22.92%	-9.12%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-005		9.22	9.83	9.12	14.2	8.36					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9333-4825		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed phenanthrene			39.24%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	6.29	2.13	3.65	4	CDF	0.0016	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5888	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	289.552		289.552		1	39.5	2.4E-04	Significant Effect			
Error	58.5911		7.32388		8						
Total	348.143				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				209	23.2	1.4E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.917	0.741	0.3350	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-006		5	20.1	15.3	24.8		15.6	23.8	1.71	19.03%	-115.75%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-006		23.1	16.4	21.4	23.8	15.6					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-9062-1316		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 failed phenanthrene				19.11%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	8.43	2.13	1.78	4	CDF	5.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.92	2.29	0.3287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	123.271		123.271		1	71	3.0E-05	Significant Effect			
Error	13.8871		1.73589		8						
Total	137.158				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			48.8	23.2	0.0024		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.924	0.741	0.3909		Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
59517-007		5	16.3	14	18.6		14.4	18.7	0.825	11.30%	-75.52%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
59517-007		18.7	16.9	17.1	14.4	14.5					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9348-4257		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed phenanthrene			25.94%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	11.4	2.13	2.41	4	CDF	1.7E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.15	2.29	0.1175	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		414.865	414.865		1	130	3.2E-06	Significant Effect			
Error		25.6071	3.20088		8						
Total		440.472			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			90.8	23.2	7.1E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.926	0.741	0.4086	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	9.3	8.97	9.63		9.01	9.65	0.118	2.84%	0.00%
29517-008		5	22.2	19.1	25.3		19.9	25.8	1.13	11.35%	-138.55%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	9.37	9.4					
29517-008		20.8	23.8	19.9	20.6	25.8					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-8598-1946		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pyrene			19.56%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	35	n/a	0	8	Exact	0.9524	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.62	2.29	0.0015	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4.59684		4.59684		1	1.55	0.2479	Non-Significant Effect			
Error	23.6734		2.95918		8						
Total	28.2702				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				30.2	23.2	0.0060	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.733	0.741	0.0022	Non-Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-001		5	8.99	8.45	9.53		8.46	9.52	0.195	4.85%	13.11%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-001		8.88	8.46	8.74	9.52	9.34					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-2366-4360		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pyrene				32.22%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	5.77	1.89	3.33	7	CDF	3.4E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	229.21		229.21		1	33.3	6.8E-04	Significant Effect			
Error	48.1345		6.87636		7						
Total	277.344				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.47	24.3	0.6999	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.817	0.701	0.0321	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-002		4	20.5	15.9	25.1		17.5	24.4	1.45	14.14%	-98.18%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-002		19.5	20.6	17.5	24.4	Outlier					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-7332-3826		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed pyrene			22.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.711	1.86	2.35	8	CDF	0.2487	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.25	2.29	0.0630	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.025		2.025		1	0.505	0.4975	Non-Significant Effect		
Error		32.0732		4.00916		8					
Total		34.0982				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.5	23.2	0.3961	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.839	0.741	0.0427	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-003		5	11.2	9.37	13.1		9.42	12.8	0.677	13.46%	-8.70%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-003		9.42	10	12.8	12.6	11.4					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-0730-7850		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pyrene			164.92%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	6.61	2.13	17.1	4	CDF	0.0014	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.02	2.29	0.2178	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6994.97		6994.97		1	43.7	1.7E-04	Significant Effect			
Error	1280.69		160.086		8						
Total	8275.65				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				54.9	23.2	0.0019	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.924	0.741	0.3872	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-004		5	63.2	41.2	85.3		41	87.3	7.93	28.04%	-511.37%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-004		54.8	59.8	41	87.3	73.3					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6447-5409		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed pyrene				62.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	7.83	1.86	6.45	8	CDF	2.5E-05	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.46	2.29	0.0129	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1843.62		1843.62		1	61.4	5.1E-05	Significant Effect		
Error		240.375		30.0468		8					
Total		2084				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			9.49	23.2	0.0511	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.803	0.741	0.0156	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-005		5	37.5	28.3	46.7		32	50.2	3.3	19.66%	-262.53%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-005		33.9	33.9	37.5	50.2	32					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-4041-5436		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pyrene			28.91%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15.2	1.89	2.99	7	CDF	6.5E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1277.97		1277.97		1	231	1.3E-06	Significant Effect			
Error	38.762		5.53743		7						
Total	1316.74				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.08	46.2	0.9864	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.796	0.701	0.0185	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-005		4	34.3	30.7	38		32	37.5	1.15	6.70%	-231.83%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-005		33.9	33.9	37.5	Outlier	32					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-0209-4356		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 failed pyrene				90.77%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	10.8	1.86	9.39	8	CDF	2.3E-06	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.06	2.29	0.1801	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		7468.2		7468.2		1	117	4.7E-06	Significant Effect		
Error		509.855		63.7318		8					
Total		7978.05				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			21.3	23.2	0.0118	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.925	0.741	0.4012	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-006		5	65	51.3	78.7		52.8	80.5	4.93	16.97%	-528.38%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-006		68.4	56	67.3	80.5	52.8					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-3519-9950		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed pyrene				89.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	9.61	1.86	9.21	8	CDF	5.7E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.23	2.29	0.0735	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5663.45		5663.45		1	92.4	1.1E-05	Significant Effect			
Error	490.587		61.3233		8						
Total	6154.03				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			20.4	23.2	0.0127	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.895	0.741	0.1950	Normal Distribution				
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
59517-007		5	57.9	44.5	71.4		46.6	74.4	4.84	18.66%	-460.13%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
59517-007		74.4	60.1	58.6	50	46.6					

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Bioaccumulation Evaluation - PAHs - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-6210-6732		Endpoint: Pyrene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pyrene				46.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	24.5	1.86	4.84	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1379		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	10130.2		10130.2		1	599	<1.0E-37	Significant Effect			
Error	135.295		16.9118		8						
Total	10265.5				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.9	23.2	0.1527		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.891	0.741	0.1748		Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	10.3	7.37	13.3		9.01	14.6	1.07	23.14%	0.00%
29517-008		5	74	67.4	80.6		65.8	79.3	2.37	7.16%	-615.39%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	9.65	9.01	9.06	14.6	9.4					
29517-008		72.5	79.3	74.6	65.8	77.8					

28 day *Nereis virens*
Sediment Bioaccumulation Evaluation
Body Burden Data and Statistical Analysis Reports
PAHs

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
PAHs (ng/g wet weight)										
Acenaphthene	7.31 J		4.66 U		14.90		4.50 U		4.94 U	
Acenaphthylene	4.38 U		4.66 U		41.20		4.50 U		4.94 U	
Anthracene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Benzo(a)anthracene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Benzo(a)pyrene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Benzo(b)fluoranthene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Benzo(k)fluoranthene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Benzo(g,h,i)perylene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Chrysene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Dibenzo(a,h)anthracene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Fluoranthene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Fluorene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Indeno(1,2,3-c,d)pyrene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
Naphthalene	5.12 J		4.66 U		4.44 U		4.50 U		4.94 U	
Phenanthrene	4.38 U		4.66 U		8.38 J		7.10 J		4.94 U	
Pyrene	4.38 U		4.66 U		4.44 U		4.50 U		4.94 U	
PAH Total	73.75		74.56		122.20		74.60		79.04	

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 1									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	14.20		5.40 J		8.27 J		4.76 U		6.82 J	
Acenaphthylene	5.28 J		4.57 U		4.86 U		4.76 U		4.72 U	
Anthracene	4.92 J		4.57 U		4.86 U		4.76 U		4.72 U	
Benzo(a)anthracene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Benzo(a)pyrene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Benzo(b)fluoranthene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Benzo(k)fluoranthene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Benzo(g,h,i)perylene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Chrysene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Dibenzo(a,h)anthracene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Fluoranthene	5.55 J		4.57 U		4.86 U		4.76 U		4.72 U	
Fluorene	16.40		4.57 U		4.86 U		4.76 U		4.72 U	
Indeno(1,2,3-c,d)pyrene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
Naphthalene	4.74 U		4.57 U		4.86 U		5.09 J		6.04 J	
Phenanthrene	28.20		4.57 U		5.82 J		6.01 J		7.90 J	
Pyrene	4.74 U		4.57 U		4.86 U		4.76 U		4.72 U	
PAH Total	121.95		73.95		82.13		77.74		82.12	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below f

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Acenaphthylene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Anthracene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Benzo(a)anthracene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Benzo(a)pyrene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Benzo(b)fluoranthene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Benzo(k)fluoranthene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Benzo(g,h,i)perylene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Chrysene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Dibenzo(a,h)anthracene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Fluoranthene	9.71	U	9.19	U	8.93	J	9.76	U	9.87	J
Fluorene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Indeno(1,2,3-c,d)pyrene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Naphthalene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Phenanthrene	9.71	U	9.19	U	8.42	U	9.76	U	8.71	U
Pyrene	9.71	U	9.19	U	8.42	U	9.76	U	9.30	J
PAH Total	155.36		147.04		135.23		156.16		141.11	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 3									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Acenaphthylene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Anthracene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Benzo(a)anthracene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Benzo(a)pyrene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Benzo(b)fluoranthene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Benzo(k)fluoranthene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Benzo(g,h,i)perylene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Chrysene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Dibenzo(a,h)anthracene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Fluoranthene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Fluorene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Indeno(1,2,3-c,d)pyrene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Naphthalene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Phenanthrene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
Pyrene	8.96	U	8.74	U	9.92	U	9.58	U	9.73	U
PAH Total	143.36		139.84		158.72		153.28		155.68	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below 100% of Method detection limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Acenaphthylene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Anthracene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Benzo(a)anthracene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Benzo(a)pyrene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Benzo(b)fluoranthene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Benzo(k)fluoranthene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Benzo(g,h,i)perylene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Chrysene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Dibenzo(a,h)anthracene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Fluoranthene	11.40	J	8.58	U	23.50		9.34	U	12.20	J
Fluorene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Indeno(1,2,3-c,d)pyrene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Naphthalene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Phenanthrene	9.56	U	8.58	U	8.68	U	9.34	U	9.22	U
Pyrene	12.80	J	8.58	U	25.20		9.34	U	15.00	J
PAH Total	158.04		137.28		170.22		149.44		156.28	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below f

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Acenaphthylene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Anthracene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Benzo(a)anthracene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Benzo(a)pyrene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Benzo(b)fluoranthene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Benzo(k)fluoranthene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Benzo(g,h,i)perylene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Chrysene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Dibenzo(a,h)anthracene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Fluoranthene	15.80	J	9.36	U	9.96	J	8.86	U	9.73	U
Fluorene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Indeno(1,2,3-c,d)pyrene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Naphthalene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Phenanthrene	9.29	U	9.36	U	9.19	U	8.86	U	9.73	U
Pyrene	14.00	J	9.36	U	9.19	U	8.86	U	9.73	U
PAH Total	159.86		149.76		147.81		141.76		155.68	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below 100% recovery

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 6									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	8.53	U	9.80	U	12.20	J	9.34	U	9.94	U
Acenaphthylene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Anthracene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Benzo(a)anthracene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Benzo(a)pyrene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Benzo(b)fluoranthene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Benzo(k)fluoranthene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Benzo(g,h,i)perylene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Chrysene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Dibenzo(a,h)anthracene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Fluoranthene	20.30		10.60	J	26.90		14.20	J	12.80	J
Fluorene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Indeno(1,2,3-c,d)pyrene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Naphthalene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Phenanthrene	8.53	U	9.80	U	9.76	U	9.34	U	9.94	U
Pyrene	15.20	J	9.80	U	20.30		10.20	J	9.94	U
PAH Total	154.92		157.60		186.28		155.16		161.90	

* = Qualifiers

U Analyte not detected; below Method detection limit

J Analyte estimated; detection below 100% recovery

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	12.60	J	11.50	J	11.10	J	9.29	U	10.80	J
Acenaphthylene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Anthracene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Benzo(a)anthracene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Benzo(a)pyrene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Benzo(b)fluoranthene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Benzo(k)fluoranthene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Benzo(g,h,i)perylene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Chrysene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Dibenzo(a,h)anthracene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Fluoranthene	24.00		31.20		14.50	J	14.80	J	23.90	
Fluorene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Indeno(1,2,3-c,d)pyrene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Naphthalene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Phenanthrene	9.54	U	9.19	U	8.66	U	9.29	U	9.34	U
Pyrene	15.70	J	21.50		10.60	J	10.90	J	19.40	
PAH Total	176.32		183.67		148.78		155.76		175.52	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below f

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
PAHs (ng/g wet weight)										
Acenaphthene	11.90	J	9.81	J	14.10	J	14.60	J	16.20	J
Acenaphthylene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Anthracene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Benzo(a)anthracene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Benzo(a)pyrene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Benzo(b)fluoranthene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Benzo(k)fluoranthene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Benzo(g,h,i)perylene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Chrysene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Dibenzo(a,h)anthracene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Fluoranthene	32.60		33.20		25.50		27.10		49.10	
Fluorene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Indeno(1,2,3-c,d)pyrene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Naphthalene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Phenanthrene	9.14	U	9.78	U	8.38	U	8.53	U	8.83	U
Pyrene	24.10		26.10		18.00		16.70	J	36.20	
PAH Total	187.42		196.25		166.54		169.29		216.29	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below f

NA Not Analyzed

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:10 (p 1 of 2)
Test Code/ID: 15-7775-1794/29525Nv-PAH

Bioaccumulation Evaluation - PAHs - Nereis																EnviroSystems, Inc.		
Start Date: 31 Aug-17			Species: Nereis virens					Sample Code: 29525-000										
End Date: 28 Sep-17			Protocol: US ACE NED RIM (2004)					Sample Source: New Haven Harbor FNP -2017										
Sample Date: 31 Aug-17			Material: Laboratory Control Sediment					Sample Station: Laboratory Control - 29525										
Sample	Rep	Pos	Aceneaphtene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphtthalene	Phenanthrene	Pyrene
29517-009	1	10	7.31	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	5.12	4.38	4.38
29517-009	2	9	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66	4.66
29517-009	3	1	14.9	41.2	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	8.38	4.44
29517-009	4	2	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	7.1	4.5
29517-009	5	27	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94
29517-001	1	37	14.2	5.28	4.92	4.74	4.74	4.74	4.74	4.74	4.74	4.74	5.55	16.4	4.74	4.74	28.2	4.74
29517-001	2	19	5.4	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57
29517-001	3	42	8.27	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	5.82	4.86
29517-001	4	16	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	5.09	6.01	4.76
29517-001	5	14	6.82	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	6.04	7.9	4.72
29517-002	1	40	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71	9.71
29517-002	2	35	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19
29517-002	3	18	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.93	8.42	8.42	8.42	8.42	8.42
29517-002	4	5	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76
29517-002	5	38	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	9.87	8.71	8.71	8.71	8.71	9.3
29517-003	1	23	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96
29517-003	2	3	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74	8.74
29517-003	3	24	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92
29517-003	4	29	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58	9.58
29517-003	5	39	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73
29517-004	1	11	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	11.4	9.56	9.56	9.56	9.56	12.8
29517-004	2	41	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58
29517-004	3	4	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	23.5	8.68	8.68	8.68	8.68	25.2
29517-004	4	15	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34
29517-004	5	13	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.22	12.2	9.22	9.22	9.22	9.22	15
29517-005	1	31	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	15.8	9.29	9.29	9.29	9.29	14
29517-005	2	6	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36	9.36

CETIS Test Data Worksheet

Report Date: 28 Nov-17 12:10 (p 2 of 2)
Test Code/ID: 15-7775-1794/29525Nv-PAH

Sample	Rep	Pos	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
29517-005	3	20	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.96	9.19	9.19	9.19	9.19	9.19
29517-005	4	7	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86
29517-005	5	21	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73
29517-006	1	45	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	20.3	8.53	8.53	8.53	8.53	15.2
29517-006	2	44	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	10.6	9.8	9.8	9.8	9.8	9.8
29517-006	3	8	12.2	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	26.9	9.76	9.76	9.76	9.76	20.3
29517-006	4	25	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	14.2	9.34	9.34	9.34	9.34	10.2
29517-006	5	28	9.94	9.94	9.94	9.94	9.94	9.94	9.94	9.94	9.94	9.94	12.8	9.94	9.94	9.94	9.94	9.94
59517-007	1	33	12.6	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.54	24	9.54	9.54	9.54	9.54	15.7
59517-007	2	12	11.5	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19	31.2	9.19	9.19	9.19	9.19	21.5
59517-007	3	17	11.1	8.66	8.66	8.66	8.66	8.66	8.66	8.66	8.66	8.66	14.5	8.66	8.66	8.66	8.66	10.6
59517-007	4	30	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	14.8	9.29	9.29	9.29	9.29	10.9
59517-007	5	34	10.8	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	23.9	9.34	9.34	9.34	9.34	19.4
29517-008	1	36	11.9	9.14	9.14	9.14	9.14	9.14	9.14	9.14	9.14	9.14	32.6	9.14	9.14	9.14	9.14	24.1
29517-008	2	32	9.81	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78	33.2	9.78	9.78	9.78	9.78	26.1
29517-008	3	22	14.1	8.38	8.38	8.38	8.38	8.38	8.38	8.38	8.38	8.38	25.5	8.38	8.38	8.38	8.38	18
29517-008	4	43	14.6	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	27.1	8.53	8.53	8.53	8.53	16.7
29517-008	5	26	16.2	8.83	8.83	8.83	8.83	8.83	8.83	8.83	8.83	8.83	49.1	8.83	8.83	8.83	8.83	36.2

CETIS Summary Report

Report Date: 29 Nov-17 10:27 (p 1 of 12)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis					EnviroSystems, Inc.	
Batch ID:	17-8079-5131	Test Type:	Bioaccumulation - PAHs	Analyst:	Nancy Roka	
Start Date:	31 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	28 Sep-17	Species:	Nereis virens	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
10-5299-0228	Acenaphthene	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-001	passed acenaphthene	
16-6757-4829	Acenaphthene	Equal Variance t Two-Sample Test	3.2E-04	29517-002	failed acenaphthene	
13-7757-7383	Acenaphthene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-002	passed acenaphthene	
02-8390-9203	Acenaphthene	Equal Variance t Two-Sample Test	1.9E-04	29517-003	failed acenaphthene	
12-1893-0753	Acenaphthene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-003	passed acenaphthene	
17-8498-4689	Acenaphthene	Equal Variance t Two-Sample Test	2.6E-04	29517-004	failed acenaphthene	
16-9114-1844	Acenaphthene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-004	passed acenaphthene	
14-7722-2434	Acenaphthene	Equal Variance t Two-Sample Test	1.6E-04	29517-005	failed acenaphthene	
00-1886-2470	Acenaphthene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-005	passed acenaphthene	
04-0879-1386	Acenaphthene	Equal Variance t Two-Sample Test	0.1141	29517-006	passed acenaphthene	
08-9565-0987	Acenaphthene	Equal Variance t Two-Sample Test	7.0E-04	29517-006	failed acenaphthene	
01-7451-1087	Acenaphthene	Equal Variance t Two-Sample Test	0.0505	59517-007	passed acenaphthene	
12-0104-7796	Acenaphthene	Equal Variance t Two-Sample Test	1.3E-04	59517-007	failed acenaphthene	
06-0051-4626	Acenaphthene	Equal Variance t Two-Sample Test	0.0142	29517-008	failed acenaphthene	
03-4185-7544	Acenaphthylene	Equal Variance t Two-Sample Test	0.1236	29517-001	passed acenaphthylene	
08-1043-3720	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.3452	29517-001	passed acenaphthylene	
18-5601-3321	Acenaphthylene	Equal Variance t Two-Sample Test	1.0E-06	29517-002	failed acenaphthylene	
00-7191-9259	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-002	passed acenaphthylene	
03-6939-6381	Acenaphthylene	Equal Variance t Two-Sample Test	2.9E-07	29517-003	failed acenaphthylene	
06-9291-7232	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-003	passed acenaphthylene	
12-8728-6106	Acenaphthylene	Equal Variance t Two-Sample Test	1.7E-07	29517-004	failed acenaphthylene	
05-7835-7847	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-004	passed acenaphthylene	
11-4453-4381	Acenaphthylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005	failed acenaphthylene	
20-5769-4790	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-005	passed acenaphthylene	
17-6222-0194	Acenaphthylene	Equal Variance t Two-Sample Test	5.2E-07	29517-006	failed acenaphthylene	
08-7830-6893	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-006	passed acenaphthylene	
20-8138-3441	Acenaphthylene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007	failed acenaphthylene	

CETIS Summary Report

Report Date: 29 Nov-17 10:27 (p 2 of 12)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-3406-2042	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	59517-007 passed acenaphthylene
11-9222-7407	Acenaphthylene	Equal Variance t Two-Sample Test	9.8E-07	29517-008 failed acenaphthylene
19-9607-4309	Acenaphthylene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-008 passed acenaphthylene
13-0280-0291	Anthracene	Equal Variance t Two-Sample Test	0.0796	29517-001 passed anthracene
20-5352-0000	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed anthracene
11-5677-7781	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed anthracene
14-2013-1243	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed anthracene
02-1949-8969	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed anthracene
14-1071-0012	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed anthracene
17-8061-1474	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed anthracene
16-8629-6758	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed anthracene
01-1827-7535	Anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed anthracene
19-6462-4023	Benzo(a)anthracene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed benzo(a)anthracene
18-2253-2676	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed benzo(a)anthracene
09-6423-2807	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed benzo(a)anthracene
15-7794-4090	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed benzo(a)anthracene
05-6390-2339	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed benzo(a)anthracene
10-5325-2633	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(a)anthracene
16-8042-7025	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(a)anthracene
01-8339-5124	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed benzo(a)anthracene
01-1045-6544	Benzo(a)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed benzo(a)anthracene
18-9152-4781	Benzo(a)pyrene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed benzo(a)pyrene
18-0517-2385	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed benzo(a)pyrene
19-9409-1478	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed benzo(a)pyrene
01-3634-4765	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed benzo(a)pyrene
08-9772-7056	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed benzo(a)pyrene
03-5386-5556	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(a)pyrene
06-2237-5197	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(a)pyrene
01-0924-5943	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed benzo(a)pyrene
14-6789-7954	Benzo(a)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed benzo(a)pyrene
15-6949-9359	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed benzo(b)fluoranthene
18-4379-0932	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed benzo(b)fluoranthene
15-2157-4091	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed benzo(b)fluoranthene
19-3759-2719	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed benzo(b)fluoranthene
01-6262-5070	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed benzo(b)fluoranthene
05-4245-2634	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(b)fluoranthene
19-6687-7532	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(b)fluoranthene
09-1313-5632	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed benzo(b)fluoranthene
14-1742-3380	Benzo(b)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed benzo(b)fluoranthene
17-2001-4762	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed benzo(g,h,i)perylene
08-2196-2152	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed benzo(g,h,i)perylene
14-3021-2009	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed benzo(g,h,i)perylene
10-5934-4498	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed benzo(g,h,i)perylene
02-5777-9492	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed benzo(g,h,i)perylene
01-4367-2342	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(g,h,i)perylene
07-1624-6934	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(g,h,i)perylene
11-9418-1244	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed benzo(g,h,i)perylene
09-5266-8177	Benzo(g,h,i)perylene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed benzo(g,h,i)perylene
09-8863-7222	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed benzo(k)fluoranthene
20-4318-6366	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed benzo(k)fluoranthene
10-8522-9426	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed benzo(k)fluoranthene
13-9164-6503	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed benzo(k)fluoranthene
00-6416-7783	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed benzo(k)fluoranthene

002-158-534-3

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Analyst: _____ QA: _____

CETIS Summary Report

Report Date: 29 Nov-17 10:27 (p 3 of 12)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis					EnviroSystems, Inc.
Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
09-3168-8123	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(k)fluoranthene	
11-5802-2284	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed benzo(k)fluoranthene	
01-1417-7485	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed benzo(k)fluoranthene	
10-7911-3294	Benzo(k)fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed benzo(k)fluoranthene	
10-3841-3600	Chrysene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed chrysene	
19-7484-2271	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed chrysene	
02-0357-1416	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed chrysene	
00-5672-3832	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed chrysene	
03-7758-8799	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed chrysene	
00-5976-7344	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed chrysene	
07-3749-1043	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed chrysene	
10-1611-6278	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed chrysene	
09-2492-8362	Chrysene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed chrysene	
12-4117-8612	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed dibenz(a,h)anthracene	
19-2155-3401	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed dibenz(a,h)anthracene	
19-2036-8215	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed dibenz(a,h)anthracene	
07-0316-3228	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed dibenz(a,h)anthracene	
06-7464-1862	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed dibenz(a,h)anthracene	
10-2627-2605	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed dibenz(a,h)anthracene	
14-4003-7230	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed dibenz(a,h)anthracene	
10-1698-3498	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed dibenz(a,h)anthracene	
09-6401-0589	Dibenz(a,h)anthracene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed dibenz(a,h)anthracene	
12-3987-5863	Fluoranthene	Equal Variance t Two-Sample Test	0.0795	29517-001 passed fluoranthene	
06-4786-3633	Fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed fluoranthene	
14-0295-9796	Fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed fluoranthene	
15-6244-7095	Fluoranthene	Unequal Variance t Two-Sample Test	0.0033	29517-004 failed fluoranthene	
11-1062-0627	Fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-004 failed fluoranthene	
02-8070-8066	Fluoranthene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed fluoranthene	
00-9857-7239	Fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed fluoranthene	
19-9821-2372	Fluoranthene	Unequal Variance t Two-Sample Test	0.0070	29517-006 failed fluoranthene	
08-3636-4681	Fluoranthene	Unequal Variance t Two-Sample Test	0.0028	59517-007 failed fluoranthene	
17-7159-6831	Fluoranthene	Unequal Variance t Two-Sample Test	5.0E-04	29517-008 failed fluoranthene	
20-0728-2848	Fluoranthene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-008 failed fluoranthene	
20-6209-2465	Fluorene	Equal Variance t Two-Sample Test	0.1454	29517-001 passed fluorene	
05-4807-9346	Fluorene	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-001 passed fluorene	
11-0615-1610	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed fluorene	
10-9594-6057	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed fluorene	
17-7373-8514	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed fluorene	
08-9952-6363	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed fluorene	
07-8117-0672	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed fluorene	
20-1783-5045	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed fluorene	
10-7201-0592	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed fluorene	
04-3307-5370	Fluorene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed fluorene	
14-1908-4100	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed indeno(1,2,3-cd)pyrene	
18-4452-9181	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed indeno(1,2,3-cd)pyrene	
16-1555-2532	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed indeno(1,2,3-cd)pyrene	
00-7807-7060	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed indeno(1,2,3-cd)pyrene	
13-9115-5813	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed indeno(1,2,3-cd)pyrene	
11-5376-6293	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed indeno(1,2,3-cd)pyrene	
11-6028-4005	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed indeno(1,2,3-cd)pyrene	
00-8626-6117	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed indeno(1,2,3-cd)pyrene	
18-1341-8881	Indeno(1,2,3-cd)pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-008 failed indeno(1,2,3-cd)pyrene	
21-0414-6064	Naphthalene	Equal Variance t Two-Sample Test	0.1454	29517-001 passed naphthalene	

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Bioaccumulation Evaluation - PAHs - Nereis				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
18-4306-2187	Naphthalene	Equal Variance t Two-Sample Test	2.0E-07	29517-002 failed naphthalene
18-6453-7712	Naphthalene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed naphthalene
13-2938-3098	Naphthalene	Equal Variance t Two-Sample Test	<1.0E-37	29517-004 failed naphthalene
02-1343-5399	Naphthalene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed naphthalene
08-8611-7711	Naphthalene	Equal Variance t Two-Sample Test	<1.0E-37	29517-006 failed naphthalene
20-7517-4359	Naphthalene	Equal Variance t Two-Sample Test	<1.0E-37	59517-007 failed naphthalene
14-5335-0672	Naphthalene	Equal Variance t Two-Sample Test	2.0E-07	29517-008 failed naphthalene
02-4158-0021	Phenanthrene	Equal Variance t Two-Sample Test	0.4349	29517-001 passed phenanthrene
09-3752-3177	Phenanthrene	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-001 passed phenanthrene
17-5516-3715	Phenanthrene	Equal Variance t Two-Sample Test	0.0022	29517-002 failed phenanthrene
16-3492-9587	Phenanthrene	Equal Variance t Two-Sample Test	0.0014	29517-003 failed phenanthrene
04-4956-1628	Phenanthrene	Equal Variance t Two-Sample Test	0.0022	29517-004 failed phenanthrene
02-9547-4609	Phenanthrene	Unequal Variance t Two-Sample Test	0.0066	29517-005 failed phenanthrene
03-2196-6390	Phenanthrene	Equal Variance t Two-Sample Test	0.0013	29517-006 failed phenanthrene
15-5079-5927	Phenanthrene	Unequal Variance t Two-Sample Test	0.0072	59517-007 failed phenanthrene
14-0380-9589	Phenanthrene	Equal Variance t Two-Sample Test	0.0031	29517-008 failed phenanthrene
14-1192-8276	Pyrene	Equal Variance t Two-Sample Test	0.1120	29517-001 passed pyrene
08-5971-1730	Pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-002 failed pyrene
13-9989-0423	Pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-003 failed pyrene
12-1861-8216	Pyrene	Unequal Variance t Two-Sample Test	0.0100	29517-004 failed pyrene
17-4162-9228	Pyrene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-004 failed pyrene
20-4401-4400	Pyrene	Equal Variance t Two-Sample Test	<1.0E-37	29517-005 failed pyrene
14-4231-0676	Pyrene	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005 failed pyrene
10-7707-8220	Pyrene	Unequal Variance t Two-Sample Test	0.0074	29517-006 failed pyrene
15-9030-3785	Pyrene	Wilcoxon Rank Sum Two-Sample Test	0.0079	29517-006 failed pyrene
21-1365-1844	Pyrene	Unequal Variance t Two-Sample Test	0.0037	59517-007 failed pyrene
02-9696-3730	Pyrene	Unequal Variance t Two-Sample Test	0.0024	29517-008 failed pyrene
05-8326-2423	Pyrene	Unequal Variance t Two-Sample Test	0.0027	29517-008 failed pyrene

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Bioaccumulation Evaluation - PAHs - Nereis											EnviroSystems, Inc.
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7	4.5	14.9	1.98	4.42	60.86%	0.00%
29517-001		5	7.89	3.2	12.6	4.76	14.2	1.69	3.78	47.89%	-8.65%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-26.11%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-29.25%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-24.98%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-27.87%
29517-006		5	9.96	8.26	11.7	8.53	12.2	0.611	1.37	13.72%	-37.18%
59517-007		5	11.1	9.57	12.5	9.29	12.6	0.537	1.2	10.86%	-52.27%
29517-008		5	13.3	10.2	16.4	9.81	16.2	1.12	2.49	18.72%	-83.45%
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3	4.38	41.2	7.32	16.4	137.07%	0.00%
29517-001		5	4.84	4.51	5.17	4.57	5.28	0.12	0.268	5.54%	59.47%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	23.27%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	21.36%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	23.96%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	22.20%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	20.63%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	22.89%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	25.17%
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.77	4.6	4.93	4.57	4.92	0.0605	0.135	2.84%	-3.97%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%

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Bioaccumulation Evaluation - PAHs - Nereis											EnviroSystems, Inc.
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%

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Bioaccumulation Evaluation - PAHs - Nereis											EnviroSystems, Inc.
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.89	4.42	5.37	4.57	5.55	0.171	0.382	7.82%	-6.72%
29517-002		5	9.49	8.98	10	8.93	9.87	0.183	0.409	4.31%	-107.07%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	13	5.49	20.5	8.58	23.5	2.71	6.05	46.52%	-183.68%
29517-005		5	10.7	7.19	14.3	8.86	15.8	1.28	2.86	26.61%	-134.34%
29517-006		5	17	8.74	25.2	10.6	26.9	2.96	6.62	39.04%	-269.98%
59517-007		5	21.7	12.9	30.5	14.5	31.2	3.16	7.07	32.60%	-372.95%
29517-008		5	33.5	21.9	45.1	25.5	49.1	4.18	9.34	27.89%	-630.80%
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	7.06	0.579	13.5	4.57	16.4	2.33	5.22	73.93%	-54.06%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%

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Bioaccumulation Evaluation - PAHs - Nereis											EnviroSystems, Inc.
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-99.78%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-97.99%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-102.57%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-106.68%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-100.79%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-94.85%
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09	4.44	5.12	0.13	0.291	6.14%	0.00%
29517-001		5	5.06	4.34	5.78	4.57	6.04	0.259	0.58	11.45%	-6.93%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-93.53%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-98.35%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-91.80%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-96.24%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-100.21%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-94.51%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-88.76%
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07	4.38	8.38	0.786	1.76	29.83%	0.00%
29517-001		5	10.5	-1.87	22.9	4.57	28.2	4.46	9.97	94.91%	-78.21%
29517-002		5	9.16	8.42	9.9	8.42	9.76	0.266	0.594	6.49%	-55.43%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-59.30%
29517-004		5	9.08	8.55	9.61	8.58	9.56	0.191	0.426	4.70%	-54.04%
29517-005		5	9.29	8.9	9.68	8.86	9.73	0.14	0.314	3.38%	-57.60%
29517-006		5	9.47	8.76	10.2	8.53	9.94	0.256	0.573	6.05%	-60.79%
59517-007		5	9.2	8.79	9.61	8.66	9.54	0.147	0.33	3.58%	-56.21%
29517-008		5	8.93	8.24	9.62	8.38	9.78	0.249	0.557	6.23%	-51.60%
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	9.28	8.61	9.95	8.42	9.76	0.241	0.539	5.81%	-102.36%
29517-003		5	9.39	8.75	10	8.74	9.92	0.228	0.51	5.43%	-104.76%
29517-004		5	14.2	5.88	22.5	8.58	25.2	2.99	6.69	47.14%	-209.42%
29517-005		5	10.2	7.58	12.9	8.86	14	0.953	2.13	20.84%	-123.12%
29517-006		5	13.1	7.35	18.8	9.8	20.3	2.07	4.62	35.33%	-185.51%
59517-007		5	15.6	9.53	21.7	10.6	21.5	2.19	4.91	31.42%	-240.75%
29517-008		5	24.2	14.6	33.9	16.7	36.2	3.48	7.78	32.14%	-428.36%

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Bioaccumulation Evaluation - PAHs - Nereis						EnviroSystems, Inc.
Acenaphthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	7.31	4.66	14.9	4.5	4.94
29517-001		14.2	5.4	8.27	4.76	6.82
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	12.2	9.34	9.94
59517-007		12.6	11.5	11.1	9.29	10.8
29517-008		11.9	9.81	14.1	14.6	16.2
Acenaphthylene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	41.2	4.5	4.94
29517-001		5.28	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.92	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Benzo(a)anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83

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Bioaccumulation Evaluation - PAHs - Nereis						EnviroSystems, Inc.
Benzo(a)pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Benzo(b)fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Benzo(g,h,i)perylene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Benzo(k)fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83

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Bioaccumulation Evaluation - PAHs - Nereis						EnviroSystems, Inc.
Chrysene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Dibenz(a,h)anthracene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Fluoranthene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		5.55	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.93	9.76	9.87
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		11.4	8.58	23.5	9.34	12.2
29517-005		15.8	9.36	9.96	8.86	9.73
29517-006		20.3	10.6	26.9	14.2	12.8
59517-007		24	31.2	14.5	14.8	23.9
29517-008		32.6	33.2	25.5	27.1	49.1
Fluorene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		16.4	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83

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Bioaccumulation Evaluation - PAHs - Nereis						EnviroSystems, Inc.
Indeno(1,2,3-cd)pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Naphthalene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	5.12	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	5.09	6.04
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Phenanthrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	8.38	7.1	4.94
29517-001		28.2	4.57	5.82	6.01	7.9
29517-002		9.71	9.19	8.42	9.76	8.71
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		9.56	8.58	8.68	9.34	9.22
29517-005		9.29	9.36	9.19	8.86	9.73
29517-006		8.53	9.8	9.76	9.34	9.94
59517-007		9.54	9.19	8.66	9.29	9.34
29517-008		9.14	9.78	8.38	8.53	8.83
Pyrene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		9.71	9.19	8.42	9.76	9.3
29517-003		8.96	8.74	9.92	9.58	9.73
29517-004		12.8	8.58	25.2	9.34	15
29517-005		14	9.36	9.19	8.86	9.73
29517-006		15.2	9.8	20.3	10.2	9.94
59517-007		15.7	21.5	10.6	10.9	19.4
29517-008		24.1	26.1	18	16.7	36.2

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-5299-0228		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed acenaphthene				66.59%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	24	n/a	0	8	Exact	0.2738	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.97	2.29	0.2650	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.985961		0.985961		1	0.0583	0.8152	Non-Significant Effect			
Error	135.234		16.9043		8						
Total	136.22				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.37	23.2	0.7686	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.764	0.741	0.0053	Non-Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-001		5	7.89	3.2	12.6		4.76	14.2	1.69	47.89%	-8.65%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-001		14.2	5.4	8.27	4.76	6.82					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-6757-4829		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed acenaphthene			23.09%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	5.83	1.89	1.24	7	CDF	3.2E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	32.1818		32.1818		1	34	6.4E-04	Significant Effect			
Error	6.62176		0.945965		7						
Total	38.8036				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.91	24.3	0.1582	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.856	0.701	0.0870	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-71.10%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-7757-7383		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed acenaphthene			51.07%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.57	2.29	0.0035	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		8.98704		8.98704		1	0.904	0.3696	Non-Significant Effect		
Error		79.5456		9.94319		8					
Total		88.5326				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			55.3	23.2	0.0019	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.756	0.741	0.0042	Non-Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-26.11%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-8390-9203		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed acenaphthene			22.43%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	6.36	1.89	1.2	7	CDF	1.9E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	36.1536		36.1536		1	40.5	3.8E-04	Significant Effect			
Error	6.2482		0.892599		7						
Total	42.4018				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.68	24.3	0.0979	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.852	0.701	0.0781	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-75.36%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-1893-0753		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed acenaphthene				50.95%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.58	2.29	0.0032	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		11.2784		11.2784		1	1.14	0.3169	Non-Significant Effect		
Error		79.172		9.8965		8					
Total		90.4504				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			75.1	23.2	0.0010	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.747	0.741	0.0033	Non-Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-29.25%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8498-4689		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed acenaphthene			21.87%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	6.03	1.89	1.17	7	CDF	2.6E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	30.8099		30.8099		1	36.3	5.3E-04	Significant Effect			
Error	5.9358		0.847971		7						
Total	36.7457				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				9.55	24.3	0.0540	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.845	0.701	0.0651	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-69.57%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-9114-1844		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-004	Marine Sediment		New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed acenaphthene				50.85%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.58	2.29	0.0030	Outlier Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		8.22649	8.22649		1	0.835	0.3877	Non-Significant Effect			
Error		78.8596	9.85745		8						
Total		87.0861			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			107	23.2	5.1E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.739	0.741	0.0026	Non-Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-24.98%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-7722-2434		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-005	Marine Sediment		New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 failed acenaphthene				21.24%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	6.55	1.89	1.14	7	CDF	1.6E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	34.3832		34.3832		1	43	3.2E-04	Significant Effect			
Error	5.60159		0.800228		7						
Total	39.9848				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				17.7	24.3	0.0180	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.834	0.701	0.0495	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-73.49%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-1886-2470		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-005	Marine Sediment		New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed acenaphthene				50.74%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.59	2.29	0.0027	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		10.2414		10.2414		1	1.04	0.3369	Non-Significant Effect		
Error		78.5254		9.81567		8					
Total		88.7668				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			199	23.2	1.5E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.725	0.741	0.0018	Non-Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-27.87%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-9565-0987		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed acenaphthene			31.96%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	5.11	1.89	1.71	7	CDF	7.0E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2166		47.2166		1	26.1	0.0014	Significant Effect			
Error	12.6812		1.81159		7						
Total	59.8978				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.08	46.2	0.9917	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.832	0.701	0.0471	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
29517-006		5	9.96	8.26	11.7		8.53	12.2	0.611	13.72%	-86.12%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
29517-006		8.53	9.8	12.2	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-0879-1386		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed acenaphthene				52.98%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.31	1.86	3.85	8	CDF	0.1141	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.48	2.29	0.0106	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		18.225		18.225		1	1.7	0.2282	Non-Significant Effect		
Error		85.605		10.7006		8					
Total		103.83				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			10.5	23.2	0.0431	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.797	0.741	0.0132	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-006		5	9.96	8.26	11.7		8.53	12.2	0.611	13.72%	-37.18%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-006		8.53	9.8	12.2	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-0104-7796		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed acenaphthene			29.73%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	6.79	1.89	1.59	7	CDF	1.3E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	72.3394		72.3394		1		46.1	2.5E-04	Significant Effect		
Error	10.9756		1.56794		7						
Total	83.315				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.2	24.3	0.8309	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.955	0.701	0.7453	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	5.35	3.26	7.45		4.5	7.31	0.659	24.62%	0.00%
59517-007		5	11.1	9.57	12.5		9.29	12.6	0.537	10.86%	-106.60%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	Outlier	4.5	4.94					
59517-007		12.6	11.5	11.1	9.29	10.8					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-7451-1087		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed acenaphthene			52.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	1.85	1.86	3.81	8	CDF	0.0505	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.5	2.29	0.0081	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	36.024		36.024		1	3.43	0.1010	Non-Significant Effect			
Error	83.8994		10.4874		8						
Total	119.923				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				13.5	23.2	0.0271	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.793	0.741	0.0120	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
59517-007		5	11.1	9.57	12.5		9.29	12.6	0.537	10.86%	-52.27%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
59517-007		12.6	11.5	11.1	9.29	10.8					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-0051-4626		Endpoint: Acenaphthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed acenaphthene			58.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.67	1.86	4.22	8	CDF	0.0142	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.26	2.29	0.0617	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	91.809		91.809		1	7.13	0.0284	Significant Effect			
Error	103.01		12.8762		8						
Total	194.819				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.14	23.2	0.2936	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.88	0.741	0.1322	Normal Distribution			
Acenaphthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	7.26	1.77	12.7		4.5	14.9	1.98	60.86%	0.00%
29517-008		5	13.3	10.2	16.4		9.81	16.2	1.12	18.72%	-83.45%
Acenaphthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	7.31	4.66	14.9	4.5	4.94					
29517-008		11.9	9.81	14.1	14.6	16.2					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-4185-7544		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed acenaphthylene			7.08%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.26	1.89	0.327	7	CDF	0.1236	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.105609		0.105609		1	1.59	0.2471	Non-Significant Effect			
Error	0.46368		0.06624		7						
Total	0.569289				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.23	46.2	0.9030	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.896	0.701	0.2299	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-001		5	4.84	4.51	5.17		4.57	5.28	0.12	5.54%	-4.72%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-001		5.28	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-1043-3720		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed acenaphthylene			114.00%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	25	n/a	0	8	Exact	0.3452	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.4E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	125.954		125.954		1	0.941	0.3605	Non-Significant Effect			
Error	1070.94		133.868		8						
Total	1196.89				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3720	23.2	4.3E-07		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.638	0.741	1.6E-04		Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-001		5	4.84	4.51	5.17		4.57	5.28	0.12	5.54%	59.47%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-001		5.28	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-5601-3321		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed acenaphthylene				13.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	14.2	1.89	0.606	7	CDF	1.0E-06	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	45.7632		45.7632		1		202	2.0E-06	Significant Effect		
Error	1.58948		0.227069		7						
Total	47.3527				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.02	46.2	0.1720	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.966	0.701	0.8608	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-98.23%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-7191-9259		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed acenaphthylene			114.06%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.6E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		19.2932		19.2932		1	0.144	0.7142	Non-Significant Effect		
Error		1072.07		134.008		8					
Total		1091.36				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			757	23.2	1.0E-05	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.646	0.741	2.0E-04	Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	23.27%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-6939-6381		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed acenaphthylene			11.47%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	17	1.89	0.53	7	CDF	2.9E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4772		50.4772		1	291	5.9E-07	Significant Effect			
Error	1.21592		0.173703		7						
Total	51.6932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.43	46.2	0.2514	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.968	0.701	0.8812	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-103.16%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-9291-7232		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed acenaphthylene			114.04%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.5E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	16.2563		16.2563		1	0.121	0.7366	Non-Significant Effect			
Error	1071.69		133.962		8						
Total	1087.95				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1030	23.2	5.6E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.644	0.741	1.9E-04		Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	21.36%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-8728-6106		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed acenaphthylene				9.88%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	18.5	1.89	0.457	7	CDF	1.7E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	44.1243		44.1243		1	342	3.4E-07	Significant Effect			
Error	0.90352		0.129074		7						
Total	45.0278				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.1	46.2	0.3796	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.966	0.701	0.8550	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-96.45%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-7835-7847		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed acenaphthylene			114.03%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.5E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		20.449	20.449		1	0.153	0.7062	Non-Significant Effect			
Error		1071.38	133.923		8						
Total		1091.83			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1470	23.2	2.8E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.642	0.741	1.8E-04	Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	23.96%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-4453-4381		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Untransformed		C < T			29517-005 failed acenaphthylene					7.85%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	24.4	1.89	0.362	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	48.3812		48.3812		1	595	<1.0E-37	Significant Effect			
Error	0.56932		0.0813314		7						
Total	48.9505				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.68	46.2	0.7000	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.701	0.9352	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-101.00%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-5769-4790		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed acenaphthylene			114.01%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	17.5563		17.5563		1	0.131	0.7266	Non-Significant Effect			
Error	1071.05		133.881		8						
Total	1088.6				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2720	23.2	8.1E-07	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.639	0.741	1.6E-04	Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	22.20%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-6222-0194		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed acenaphthylene			12.69%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	15.7	1.89	0.586	7	CDF	5.2E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3585		52.3585		1	246	1.0E-06	Significant Effect			
Error	1.49032		0.212903		7						
Total	53.8488				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				5.6	46.2	0.1885	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.875	0.701	0.1401	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-105.06%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-7830-6893		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed acenaphthylene				114.06%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.6E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	15.1536		15.1536		1	0.113	0.7453	Non-Significant Effect			
Error	1071.97		133.996		8						
Total	1087.12				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			815	23.2	9.0E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.644	0.741	1.9E-04	Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	20.63%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Report Date: 29 Nov-17 10:25 (p 27 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-8138-3441		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed acenaphthylene				8.13%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	23.1	1.89	0.375	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	46.6957		46.6957		1	535	<1.0E-37	Significant Effect			
Error	0.61092		0.0872743		7						
Total	47.3066				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.85	46.2	0.6395	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.945	0.701	0.6367	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-99.22%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-3406-2042		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed acenaphthylene			114.01%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between		18.6596	18.6596	1	0.139	0.7186	Non-Significant Effect				
Error		1071.09	133.886	8							
Total		1089.75		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2460	23.2	9.9E-07	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.639	0.741	1.6E-04	Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	22.89%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-9222-7407		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed acenaphthylene				12.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	14.3	1.89	0.571	7	CDF	9.8E-07	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	41.3185		41.3185		1	204	1.9E-06	Significant Effect			
Error	1.41508		0.202154		7						
Total	42.7336				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				5.28	46.2	0.2029	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.955	0.701	0.7405	Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	4.62	4.23	5.01		4.38	4.94	0.121	5.24%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-93.33%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	Outlier	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-9607-4309		Endpoint: Acenaphthylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed acenaphthylene			114.05%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.6E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	22.56		22.56		1	0.168	0.6923	Non-Significant Effect			
Error	1071.89		133.987		8						
Total	1094.45				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			864	23.2	8.0E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.646	0.741	1.9E-04		Non-Normal Distribution			
Acenaphthylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	11.9	-8.38	32.3		4.38	41.2	7.32	137.07%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	25.17%
Acenaphthylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	41.2	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-0280-0291		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed anthracene			4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.55	1.86	0.218	8	CDF	0.0796	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.04	2.29	0.1998	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0828101		0.0828101		1	2.41	0.1593	Non-Significant Effect		
Error		0.27504		0.03438		8					
Total		0.35785				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.76	23.2	0.3489	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.941	0.741	0.5621	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.77	4.6	4.93		4.57	4.92	0.0605	2.84%	-3.97%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.92	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-5352-0000		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed anthracene				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5677-7781		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed anthracene				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29		0.6055	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2		0.1414	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741		0.9228	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-2013-1243		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed anthracene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		50.4452		50.4452		1	434	<1.0E-37	Significant Effect		
Error		0.92944		0.11618		8					
Total		51.3746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-1949-8969		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-005	Marine Sediment		New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed anthracene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.73	2.29	0.6296	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.95	23.2	0.5343	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.957	0.741	0.7561	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8061-1474		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed anthracene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	58.3908		58.3908		1		1020	<1.0E-37	Significant Effect		
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1071-0012		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed anthracene				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-8629-6758		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed anthracene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1922	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		53.361		53.361		1	670	<1.0E-37	Significant Effect		
Error		0.63684		0.079605		8					
Total		53.9978				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.15	23.2	0.4757	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.952	0.741	0.6879	Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1827-7535		Endpoint: Anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed anthracene				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
Anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-6462-4023		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed benzo(a)anthracene				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect		
Error		0.24552		0.03069		8					
Total		0.29881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-2253-2676		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed benzo(a)anthracene			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				7	23.2	0.0859	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.966	0.741	0.8556	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-6423-2807		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed benzo(a)anthracene				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.74	2.29	0.6055		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		5.15	23.2	0.1414		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.974	0.741	0.9228		Normal Distribution				
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-7794-4090		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed benzo(a)anthracene				8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.54	2.29	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		3.6	23.2	0.2422		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.975	0.741	0.9294		Normal Distribution				
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-6390-2339		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(a)anthracene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-5325-2633		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed benzo(a)anthracene				6.65%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-8042-7025		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(a)anthracene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-8339-5124		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(a)anthracene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1045-6544		Endpoint: Benzo(a)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed benzo(a)anthracene			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.14	23.2	0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.948	0.741	0.6414	Normal Distribution			
Benzo(a)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Benzo(a)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-9152-4781		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed benzo(a)pyrene				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect		
Error		0.24552		0.03069		8					
Total		0.29881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-0517-2385		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed benzo(a)pyrene				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-9409-1478		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed benzo(a)pyrene				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-3634-4765		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed benzo(a)pyrene				8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-9772-7056		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(a)pyrene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-5386-5556		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed benzo(a)pyrene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-2237-5197		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(a)pyrene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0924-5943		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed benzo(a)pyrene				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-6789-7954		Endpoint: Benzo(a)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed benzo(a)pyrene				10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29		0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2		0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741		0.6414	Normal Distribution			
Benzo(a)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Benzo(a)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6949-9359		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed benzo(b)fluoranthene			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect			
Error	0.24552		0.03069		8						
Total	0.29881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-4379-0932		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed benzo(b)fluoranthene			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.74	2.29	0.6000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		7	23.2	0.0859		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.966	0.741	0.8556		Normal Distribution				
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-2157-4091		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed benzo(b)fluoranthene			10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				5.15	23.2	0.1414	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.974	0.741	0.9228	Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-3759-2719		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed benzo(b)fluoranthene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		50.4452		50.4452		1	434	<1.0E-37	Significant Effect		
Error		0.92944		0.11618		8					
Total		51.3746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-6262-5070		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(b)fluoranthene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-6687-7532		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed benzo(b)fluoranthene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-4245-2634		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(b)fluoranthene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1313-5632		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(b)fluoranthene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1742-3380		Endpoint: Benzo(b)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed benzo(b)fluoranthene			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
Benzo(b)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Benzo(b)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-2001-4762		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed benzo(g,h,i)perylene			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect			
Error	0.24552		0.03069		8						
Total	0.29881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-2196-2152		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed benzo(g,h,i)perylene				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		52.3037		52.3037		1	259	2.2E-07	Significant Effect		
Error		1.6154		0.201925		8					
Total		53.9191				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7	23.2	0.0859	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8556	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-3021-2009		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 failed benzo(g,h,i)perylene				10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-5934-4498		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed benzo(g,h,i)perylene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		50.4452		50.4452		1	434	<1.0E-37	Significant Effect		
Error		0.92944		0.11618		8					
Total		51.3746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-5777-9492		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 failed benzo(g,h,i)perylene				7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.73	2.29	0.6296		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.95	23.2	0.5343		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.957	0.741	0.7561		Normal Distribution				
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-4367-2342		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed benzo(g,h,i)perylene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-1624-6934		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed benzo(g,h,i)perylene				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.3	2.29	0.0467		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		6.51	23.2	0.0970		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.875	0.741	0.1146		Normal Distribution				
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-9418-1244		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed benzo(g,h,i)perylene				7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-5266-8177		Endpoint: Benzo(g,h,i)perylene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed benzo(g,h,i)perylene			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.14	23.2	0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.948	0.741	0.6414	Normal Distribution			
Benzo(g,h,i)perylene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Benzo(g,h,i)perylene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-8863-7222		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed benzo(k)fluoranthene			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect		
Error		0.24552		0.03069		8					
Total		0.29881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-4318-6366		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed benzo(k)fluoranthene			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				7	23.2	0.0859	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.966	0.741	0.8556	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-8522-9426		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed benzo(k)fluoranthene			10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-9164-6503		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed benzo(k)fluoranthene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.6	23.2	0.2422	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.741	0.9294	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-6416-7783		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed benzo(k)fluoranthene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.73	2.29	0.6296	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.95	23.2	0.5343	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.957	0.741	0.7561	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5802-2284		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result					PMSD	
Untransformed		C < T			29517-006 failed benzo(k)fluoranthene					6.65%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-3168-8123		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed benzo(k)fluoranthene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1417-7485		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed benzo(k)fluoranthene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7911-3294		Endpoint: Benzo(k)fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 failed benzo(k)fluoranthene				10.89%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29		0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2		0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741		0.6414	Normal Distribution			
Benzo(k)fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Benzo(k)fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-3841-3600		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed chrysene				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect		
Error		0.24552		0.03069		8					
Total		0.29881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-7484-2271		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed chrysene				11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-0357-1416		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed chrysene			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-5672-3832		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed chrysene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-7758-8799		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-005	Marine Sediment		New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed chrysene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.73	2.29	0.6296	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		55.272		55.272		1	743	<1.0E-37	Significant Effect		
Error		0.59524		0.074405		8					
Total		55.8672				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.95	23.2	0.5343	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7561	Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-5976-7344		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed chrysene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-3749-1043		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed chrysene				11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test		2.3		2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test		6.51		23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test		0.875		0.741	0.1146		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-1611-6278		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed chrysene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1922	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.15	23.2	0.4757	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.952	0.741	0.6879	Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-2492-8362		Endpoint: Chrysene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed chrysene			10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.12	2.29	0.1349		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.14	23.2	0.1068		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.948	0.741	0.6414		Normal Distribution			
Chrysene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Chrysene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-4117-8612		Endpoint: Dibenz(a,h)anthracene		CETIS Version: CETISv1.9.2							
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29517-001 passed dibenz(a,h)anthracene				4.49%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.16	2.29	0.1119	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect			
Error	0.24552		0.03069		8						
Total	0.29881				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		4.63	23.2	0.1668	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.933	0.741	0.4791	Normal Distribution					
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-2155-3401		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 failed dibenz(a,h)anthracene			11.53%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		52.3037		52.3037		1	259	2.2E-07	Significant Effect		
Error		1.6154		0.201925		8					
Total		53.9191				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7	23.2	0.0859	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8556	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-2036-8215		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed dibenz(a,h)anthracene			10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				5.15	23.2	0.1414	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.974	0.741	0.9228	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-0316-3228		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed dibenz(a,h)anthracene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-7464-1862		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed dibenz(a,h)anthracene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-4003-7230		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed dibenz(a,h)anthracene				6.65%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-2627-2605		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed dibenz(a,h)anthracene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.29	0.0467		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	59.7803		59.7803		1	315	<1.0E-37	Significant Effect			
Error	1.51624		0.18953		8						
Total	61.2965				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.51	23.2	0.0970		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1146		Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-1698-3498		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed dibenz(a,h)anthracene			7.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.05	2.29	0.1922	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.15	23.2	0.4757	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.952	0.741	0.6879	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-6401-0589		Endpoint: Dibenz(a,h)anthracene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed dibenz(a,h)anthracene			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				6.14	23.2	0.1068	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.948	0.741	0.6414	Normal Distribution			
Dibenz(a,h)anthracene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Dibenz(a,h)anthracene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-3987-5863		Endpoint: Fluoranthene		CETIS Version: CETISv1.9.2							
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed fluoranthene				8.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.55	1.86	0.369	8	CDF	0.0795	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.23	2.29	0.0752	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.23716		0.23716		1	2.41	0.1590	Non-Significant Effect			
Error	0.7866		0.098325		8						
Total	1.02376				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.9	23.2	0.3277	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.845	0.741	0.0507	Normal Distribution				
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.89	4.42	5.37		4.57	5.55	0.171	7.82%	-6.72%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		5.55	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-4786-3633		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed fluoranthene			8.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	23.5	1.86	0.388	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.81	2.29	0.4869	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	60.2212		60.2212		1	553	<1.0E-37	Significant Effect			
Error	0.8712		0.1089		8						
Total	61.0924				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.31	23.2	0.2725	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.946	0.741	0.6205	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.49	8.98	10		8.93	9.87	0.183	4.31%	-107.07%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.93	9.76	9.87					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-0295-9796		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed fluoranthene			10.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		57.648		57.648		1	371	<1.0E-37	Significant Effect		
Error		1.24184		0.15523		8					
Total		58.8898				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6244-7095		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 failed fluoranthene				43.95%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	6.77	2.35	2.01	3	CDF	0.0033	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	74.6525		74.6525		1	58.9	1.2E-04	Significant Effect			
Error	8.87632		1.26805		7						
Total	83.5288				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				57.3	24.3	0.0019	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.968	0.701	0.8749	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		4	10.4	7.67	13.1		8.58	12.2	0.85	16.38%	-126.44%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		11.4	8.58	Outlier	9.34	12.2					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-1062-0627		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed fluoranthene			109.82%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.6	2.29	0.0022	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		177.241		177.241		1	9.67	0.0144	Significant Effect		
Error		146.584		18.323		8					
Total		323.825				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			725	23.2	1.1E-05	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.728	0.741	0.0019	Non-Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	13	5.49	20.5		8.58	23.5	2.71	46.52%	-183.68%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		11.4	8.58	23.5	9.34	12.2					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-8070-8066		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed fluoranthene			9.91%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	20.4	1.89	0.454	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.2141		53.2141		1	417	1.7E-07	Significant Effect			
Error	0.893595		0.127656		7						
Total	54.1077				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.57	24.3	0.1764	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.96	0.701	0.7962	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		4	9.48	8.71	10.2		8.86	9.96	0.24	5.07%	-106.75%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		Outlier	9.36	9.96	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-9857-7239		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed fluoranthene			52.01%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.65	2.29	9.7E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		94.8024		94.8024		1	23.1	0.0013	Significant Effect		
Error		32.8728		4.1091		8					
Total		127.675				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			162	23.2	2.3E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.723	0.741	0.0017	Non-Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	10.7	7.19	14.3		8.86	15.8	1.28	26.61%	-134.34%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		15.8	9.36	9.96	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-9821-2372		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed fluoranthene			137.78%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.18	2.13	6.32	4	CDF	0.0070	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.25	2.29	0.0645		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	382.913		382.913		1	17.5	0.0031	Significant Effect			
Error	175.534		21.9417		8						
Total	558.447				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			868	23.2	7.9E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.893	0.741	0.1856		Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	17	8.74	25.2		10.6	26.9	2.96	39.04%	-269.98%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		20.3	10.6	26.9	14.2	12.8					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-3636-4681		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed fluoranthene			147.08%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	5.41	2.13	6.74	4	CDF	0.0028	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.02	2.29	0.2155	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		730.683		730.683		1	29.2	6.4E-04	Significant Effect		
Error		200.03		25.0037		8					
Total		930.713				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			990	23.2	6.1E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.87	0.741	0.1011	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	21.7	12.9	30.5		14.5	31.2	3.16	32.60%	-372.95%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		24	31.2	14.5	14.8	23.9					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-7159-6831		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed fluoranthene			99.57%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	12.9	2.35	4.56	3	CDF	5.0E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1390.67		1390.67		1	215	1.6E-06	Significant Effect			
Error	45.2219		6.46027		7						
Total	1435.89				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				297	24.3	7.5E-05	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.919	0.701	0.3877	Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		4	29.6	23.4	35.8		25.5	33.2	1.94	13.09%	-545.72%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		32.6	33.2	25.5	27.1	Outlier					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-0728-2848		Endpoint: Fluoranthene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed fluoranthene			169.56%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.5	2.29	0.0079	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2090.34		2090.34		1	47.9	1.2E-04	Significant Effect		
Error		349.422		43.6777		8					
Total		2439.76				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1730	23.2	2.0E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.733	0.741	0.0022	Non-Normal Distribution			
Fluoranthene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	33.5	21.9	45.1		25.5	49.1	4.18	27.89%	-630.80%
Fluoranthene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		32.6	33.2	25.5	27.1	49.1					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-6209-2465		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed fluorene			5.19%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.14	1.89	0.238	7	CDF	0.1454	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0457606		0.0457606		1	1.31	0.2908	Non-Significant Effect			
Error	0.245395		0.0350564		7						
Total	0.291156				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.48	46.2	0.3332	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.701	0.5058	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		4	4.73	4.54	4.92		4.57	4.86	0.0602	2.55%	-3.13%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		Outlier	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-4807-9346		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed fluorene			94.81%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.68	2.29	4.7E-04	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		15.3512		15.3512		1	1.12	0.3200	Non-Significant Effect		
Error		109.243		13.6554		8					
Total		124.594				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			540	23.2	2.0E-05	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.653	0.741	2.4E-04	Non-Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	7.06	0.579	13.5		4.57	16.4	2.33	73.93%	-54.06%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		16.4	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-0615-1610		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed fluorene			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		52.3037		52.3037		1	259	2.2E-07	Significant Effect		
Error		1.6154		0.201925		8					
Total		53.9191				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			7	23.2	0.0859	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8556	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-9594-6057		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed fluorene			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		57.648		57.648		1	371	<1.0E-37	Significant Effect		
Error		1.24184		0.15523		8					
Total		58.8898				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-7373-8514		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-004	Marine Sediment		New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed fluorene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		50.4452		50.4452		1	434	<1.0E-37	Significant Effect		
Error		0.92944		0.11618		8					
Total		51.3746				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.6	23.2	0.2422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9294	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-9952-6363		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed fluorene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.73	2.29	0.6296	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		55.272		55.272		1	743	<1.0E-37	Significant Effect		
Error		0.59524		0.074405		8					
Total		55.8672				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.95	23.2	0.5343	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7561	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-1783-5045		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed fluorene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	58.3908		58.3908		1		1020	<1.0E-37	Significant Effect		
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8117-0672		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed fluorene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		59.7803		59.7803		1	315	<1.0E-37	Significant Effect		
Error		1.51624		0.18953		8					
Total		61.2965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7201-0592		Endpoint: Fluorene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed fluorene			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.05	2.29	0.1922	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		53.361		53.361		1	670	<1.0E-37	Significant Effect		
Error		0.63684		0.079605		8					
Total		53.9978				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.15	23.2	0.4757	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.952	0.741	0.6879	Normal Distribution			
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-3307-5370		Endpoint: Fluorene		CETIS Version: CETISv1.9.2							
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29517-008 failed fluorene				10.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.12	2.29	0.1349	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.2628		47.2628		1	262	2.1E-07	Significant Effect			
Error	1.441		0.180125		8						
Total	48.7038				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		6.14	23.2	0.1068	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.948	0.741	0.6414	Normal Distribution					
Fluorene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Fluorene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1908-4100		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed indeno(1,2,3-cd)pyrene			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect			
Error	0.24552		0.03069		8						
Total	0.29881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution				
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-4452-9181		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed indeno(1,2,3-cd)pyrene			11.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	16.1	1.86	0.528	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	52.3037		52.3037		1	259	2.2E-07	Significant Effect			
Error	1.6154		0.201925		8						
Total	53.9191				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7	23.2	0.0859		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.966	0.741	0.8556		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-99.78%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-1555-2532		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed indeno(1,2,3-cd)pyrene			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.74	2.29	0.6055		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	57.648		57.648		1	371	<1.0E-37	Significant Effect			
Error	1.24184		0.15523		8						
Total	58.8898				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			5.15	23.2	0.1414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.974	0.741	0.9228		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-7807-7060		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed indeno(1,2,3-cd)pyrene			8.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	20.8	1.86	0.401	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	50.4452		50.4452		1	434	<1.0E-37	Significant Effect			
Error	0.92944		0.11618		8						
Total	51.3746				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.6	23.2	0.2422		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9294		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-97.99%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-9115-5813		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed indeno(1,2,3-cd)pyrene			7.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	27.3	1.86	0.321	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.73	2.29	0.6296		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	55.272		55.272		1	743	<1.0E-37	Significant Effect			
Error	0.59524		0.074405		8						
Total	55.8672				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.95	23.2	0.5343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741	0.7561		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-102.57%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5376-6293		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed indeno(1,2,3-cd)pyrene			6.65%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	31.9	1.89	0.305	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	58.3908		58.3908		1	1020	<1.0E-37	Significant Effect			
Error	0.40232		0.0574742		7						
Total	58.7932				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.32	24.3	0.7676	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.986	0.701	0.9868	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	9.71	9.3	10.1		9.34	9.94	0.129	2.66%	-111.82%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		Outlier	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-6028-4005		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed indeno(1,2,3-cd)pyrene			11.17%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	17.8	1.86	0.512	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.3	2.29	0.0467	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		59.7803		59.7803		1	315	<1.0E-37	Significant Effect		
Error		1.51624		0.18953		8					
Total		61.2965				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.51	23.2	0.0970	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.875	0.741	0.1146	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-106.68%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-8626-6117		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed indeno(1,2,3-cd)pyrene			7.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	25.9	1.86	0.332	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1922		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.361		53.361		1	670	<1.0E-37	Significant Effect			
Error	0.63684		0.079605		8						
Total	53.9978				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4757		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6879		Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-100.79%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-1341-8881		Endpoint: Indeno(1,2,3-cd)pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed indeno(1,2,3-cd)pyrene			10.89%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	16.2	1.86	0.499	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.12	2.29	0.1349	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		47.2628		47.2628		1	262	2.1E-07	Significant Effect		
Error		1.441		0.180125		8					
Total		48.7038				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			6.14	23.2	0.1068	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.948	0.741	0.6414	Normal Distribution			
Indeno(1,2,3-cd)pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-94.85%
Indeno(1,2,3-cd)pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-0414-6064		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed naphthalene			11.40%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.13	1.86	0.539	8	CDF	0.1454	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.27	2.29	0.0582	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.26896		0.26896		1	1.28	0.2908	Non-Significant Effect			
Error	1.68188		0.210235		8						
Total	1.95084				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.97	23.2	0.2099	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.886	0.741	0.1530	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-001		5	5.06	4.34	5.78		4.57	6.04	0.259	11.45%	-6.93%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	5.09	6.04					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-4306-2187		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed naphthalene			11.63%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	15	1.86	0.55	8	CDF	2.0E-07	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.67	2.29	0.7393	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	48.9737		48.9737		1	224	3.9E-07	Significant Effect			
Error	1.75156		0.218945		8						
Total	50.7253				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.18	23.2	0.1948	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.967	0.741	0.8656	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-93.53%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-6453-7712		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed naphthalene			10.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	17.7	1.86	0.488	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.65	2.29	0.7876	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	54.1493		54.1493		1	314	<1.0E-37	Significant Effect			
Error	1.378		0.17225		8						
Total	55.5273				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.08	23.2	0.3021	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.953	0.741	0.7005	Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-98.35%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-2938-3098		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed naphthalene			9.07%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	18.8	1.86	0.429	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.44	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	47.1758		47.1758		1	354	<1.0E-37	Significant Effect			
Error	1.0656		0.1332		8						
Total	48.2414				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.15	23.2	0.4762		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.942	0.741	0.5781		Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-91.80%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-1343-5399		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed naphthalene			7.51%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	23.8	1.86	0.356	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	51.8473		51.8473		1	567	<1.0E-37	Significant Effect			
Error	0.7314		0.091425		8						
Total	52.5787				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.16	23.2	0.8869		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.967	0.741	0.8635		Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-96.24%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-8611-7711		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:38		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-006	Marine Sediment	New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed naphthalene			11.30%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	16.5	1.86	0.535	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.2	2.29	0.0859		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	56.2164		56.2164		1	272	1.8E-07	Significant Effect			
Error	1.6524		0.20655		8						
Total	57.8688				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		3.89	23.2	0.2169		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.893	0.741	0.1853		Normal Distribution				
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-100.21%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-7517-4359		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 failed naphthalene				7.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	22.7	1.86	0.366	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.86	2.29	0.4097		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	49.997		49.997		1	517	<1.0E-37	Significant Effect			
Error	0.773		0.096625		8						
Total	50.77				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.29	23.2	0.8131		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.968	0.741	0.8747		Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-94.51%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-5335-0672		Endpoint: Naphthalene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed naphthalene			11.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	15	1.86	0.522	8	CDF	2.0E-07	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.03	2.29	0.2096		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	44.1		44.1		1	224	3.9E-07	Significant Effect			
Error	1.57716		0.197145		8						
Total	45.6772				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.67	23.2	0.2363		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.952	0.741	0.6950		Normal Distribution			
Naphthalene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.73	4.37	5.09		4.44	5.12	0.13	6.14%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-88.76%
Naphthalene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	5.12	4.66	4.44	4.5	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-4158-0021		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed phenanthrene			34.61%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	0.17	1.89	2.04	7	CDF	0.4349	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0744201		0.0744201		1	0.0289	0.8698	Non-Significant Effect			
Error	18.0246		2.57494		7						
Total	18.099				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.64	46.2	0.7148	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.889	0.701	0.1937	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-001		4	6.08	3.89	8.26		4.57	7.9	0.687	22.62%	-3.11%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-001		Outlier	4.57	5.82	6.01	7.9					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-3752-3177		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed phenanthrene			142.83%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	24	n/a	0	8	Exact	0.2738	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.62	2.29	0.0015		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	53.0842		53.0842		1	1.04	0.3384	Non-Significant Effect			
Error	409.637		51.2046		8						
Total	462.721				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			32.1	23.2	0.0054		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.735	0.741	0.0023		Non-Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-001		5	10.5	-1.87	22.9		4.57	28.2	4.46	94.91%	-78.21%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-001		28.2	4.57	5.82	6.01	7.9					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-5516-3715		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 failed phenanthrene			26.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	3.94	1.86	1.54	8	CDF	0.0022	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.01	2.29	0.2233		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	26.6669		26.6669		1	15.5	0.0043	Significant Effect			
Error	13.7732		1.72164		8						
Total	40.44				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			8.74	23.2	0.0589		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.945	0.741	0.6133		Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-002		5	9.16	8.42	9.9		8.42	9.76	0.266	6.49%	-55.43%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-002		9.71	9.19	8.42	9.76	8.71					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-3492-9587		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 failed phenanthrene			25.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	4.27	1.86	1.52	8	CDF	0.0014	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.04	2.29	0.1975		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	30.5201		30.5201		1	18.2	0.0027	Significant Effect			
Error	13.3996		1.67495		8						
Total	43.9197				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			11.9	23.2	0.0343		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6348		Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-59.30%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4956-1628		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed phenanthrene			25.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	3.94	1.86	1.5	8	CDF	0.0022	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.06	2.29	0.1769	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		25.3446		25.3446		1	15.5	0.0043	Significant Effect		
Error		13.0872		1.6359		8					
Total		38.4318				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			17	23.2	0.0179	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6323	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-004		5	9.08	8.55	9.61		8.58	9.56	0.191	4.70%	-54.04%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-004		9.56	8.58	8.68	9.34	9.22					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-9547-4609		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed phenanthrene			28.89%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	4.25	2.13	1.7	4	CDF	0.0066	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.09	2.29	0.1557	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	28.7981		28.7981		1	18.1	0.0028	Significant Effect			
Error	12.753		1.59413		8						
Total	41.5511				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				31.4	23.2	0.0056	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5520	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-005		5	9.29	8.9	9.68		8.86	9.73	0.14	3.38%	-57.60%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-005		9.29	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-2196-6390		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed phenanthrene			26.10%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.33	1.86	1.54	8	CDF	0.0013	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.02	2.29	0.2163	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	32.0768		32.0768		1	18.8	0.0025	Significant Effect			
Error	13.674		1.70925		8						
Total	45.7508				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				9.4	23.2	0.0519	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.934	0.741	0.4914	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-006		5	9.47	8.76	10.2		8.53	9.94	0.256	6.05%	-60.79%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-006		8.53	9.8	9.76	9.34	9.94					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-5079-5927		Endpoint: Phenanthrene		CETIS Version: CETISv1.9.2							
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		59517-007 failed phenanthrene				28.94%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	4.14	2.13	1.71	4	CDF	0.0072	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.09	2.29	0.1583	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	27.4234		27.4234		1	17.1	0.0032	Significant Effect			
Error	12.7946		1.59933		8						
Total	40.218				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		28.4	23.2	0.0068	Unequal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.936	0.741	0.5125	Normal Distribution					
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
59517-007		5	9.2	8.79	9.61		8.66	9.54	0.147	3.58%	-56.21%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
59517-007		9.54	9.19	8.66	9.29	9.34					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-0380-9589		Endpoint: Phenanthrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 failed phenanthrene				26.02%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	3.69	1.86	1.53	8	CDF	0.0031	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.02	2.29	0.2111	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		23.104		23.104		1	13.6	0.0062	Significant Effect		
Error		13.5988		1.69984		8					
Total		36.7028				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			9.97	23.2	0.0468	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6339	Normal Distribution			
Phenanthrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	5.89	3.71	8.07		4.38	8.38	0.786	29.83%	0.00%
29517-008		5	8.93	8.24	9.62		8.38	9.78	0.249	6.23%	-51.60%
Phenanthrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	8.38	7.1	4.94					
29517-008		9.14	9.78	8.38	8.53	8.83					

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 Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1192-8276		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed pyrene			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect			
Error	0.24552		0.03069		8						
Total	0.29881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86		4.57	4.86	0.0467	2.21%	-3.18%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-5971-1730		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 failed pyrene				10.60%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002*	18	1.86	0.486	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.2	2.29	0.0885	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		55.0372		55.0372		1	323	<1.0E-37	Significant Effect		
Error		1.36524		0.170655		8					
Total		56.4024				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.76	23.2	0.1183	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.903	0.741	0.2338	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-002		5	9.28	8.61	9.95		8.42	9.76	0.241	5.81%	-102.36%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		9.71	9.19	8.42	9.76	9.3					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-9989-0423		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 failed pyrene			10.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003*	19.3	1.86	0.463	8	CDF	<1.0E-37	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6055	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		57.648		57.648		1	371	<1.0E-37	Significant Effect		
Error		1.24184		0.15523		8					
Total		58.8898				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.15	23.2	0.1414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.974	0.741	0.9228	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-003		5	9.39	8.75	10		8.74	9.92	0.228	5.43%	-104.76%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		8.96	8.74	9.92	9.58	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-1861-8216		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 failed pyrene			77.34%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	4.54	2.35	3.55	3	CDF	0.0100	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	104.15		104.15		1		26.7	0.0013	Significant Effect		
Error	27.3143		3.90205		7						
Total	131.465				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				179	24.3	2.0E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.927	0.701	0.4574	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		4	11.4	6.65	16.2		8.58	15	1.5	26.30%	-149.35%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		12.8	8.58	Outlier	9.34	15					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-4162-9228		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:35		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 failed pyrene			121.36%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.47	2.29	0.0113	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		230.4		230.4		1	10.3	0.0124	Significant Effect		
Error		179.005		22.3756		8					
Total		409.405				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			886	23.2	7.6E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.779	0.741	0.0080	Non-Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-004		5	14.2	5.88	22.5		8.58	25.2	2.99	47.14%	-209.42%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		12.8	8.58	25.2	9.34	15					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-4401-4400		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 failed pyrene			8.08%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	24	1.89	0.371	7	CDF	<1.0E-37	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	49.1098		49.1098		1	578	<1.0E-37	Significant Effect			
Error	0.59522		0.0850314		7						
Total	49.705				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.6	24.3	0.3791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.954	0.701	0.7326	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		4	9.28	8.71	9.86		8.86	9.73	0.181	3.90%	-102.55%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		Outlier	9.36	9.19	8.86	9.73					

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Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-4231-0676		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:36		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age		Client Name		Project			
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h		AECOM		Dredged Sediment Evalu			
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-005	Marine Sediment		New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 failed pyrene				38.89%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value		Decision(α:5%)		
Extreme Value		Grubbs Extreme Value Test			2.64	2.29	0.0011		Outlier Detected		
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		79.6368		79.6368		1	34.7	3.7E-04	Significant Effect		
Error		18.3802		2.29753		8					
Total		98.017				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value		Decision(α:1%)		
Variances		Variance Ratio F Test			90	23.2	7.2E-04		Unequal Variances		
Distribution		Shapiro-Wilk W Normality Test			0.73	0.741	0.0020		Non-Normal Distribution		
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-005		5	10.2	7.58	12.9		8.86	14	0.953	20.84%	-123.12%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		14	9.36	9.19	8.86	9.73					

CETIS Analytical Report

Report Date: 29 Nov-17 10:26 (p 157 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-9030-3785		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Nonparametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
29517-006	Marine Sediment		New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)					
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed pyrene			47.70%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	10	n/a	0	7	Exact	0.0079	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	99.7853		99.7853		1	33.7	6.6E-04	Significant Effect			
Error	20.7206		2.96009		7						
Total	120.506				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				135	24.3	3.5E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.761	0.701	0.0073	Non-Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		4	11.3	7.12	15.4		9.8	15.2	1.31	23.17%	-146.18%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		15.2	9.8	Outlier	10.2	9.94					

CETIS Analytical Report

Report Date: 29 Nov-17 10:26 (p 158 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7707-8220		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:37		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 failed pyrene				96.29%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.11	2.13	4.41	4	CDF	0.0074	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.34	2.29	0.0360		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	180.795		180.795		1	16.9	0.0034	Significant Effect			
Error	85.7368		10.7171		8						
Total	266.532				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			424	23.2	3.3E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.84	0.741	0.0442		Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-006		5	13.1	7.35	18.8		9.8	20.3	2.07	35.33%	-185.51%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		15.2	9.8	20.3	10.2	9.94					

CETIS Analytical Report

Report Date: 29 Nov-17 10:26 (p 159 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-1365-1844		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed pyrene			102.18%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	5.02	2.13	4.68	4	CDF	0.0037	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.5053	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		304.483		304.483		1	25.2	0.0010	Significant Effect		
Error		96.5499		12.0687		8					
Total		401.033				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			477	23.2	2.6E-05	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.877	0.741	0.1216	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
59517-007		5	15.6	9.53	21.7		10.6	21.5	2.19	31.42%	-240.75%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		15.7	21.5	10.6	10.9	19.4					

CETIS Analytical Report

Report Date: 29 Nov-17 10:26 (p 160 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-8326-2423		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: No				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed pyrene			117.66%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	7.26	2.35	5.39	3	CDF	0.0027	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	615.384		615.384		1	68.3	7.4E-05	Significant Effect			
Error	63.1094		9.01563		7						
Total	678.494				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				415	24.3	3.8E-05	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.926	0.701	0.4419	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		4	21.2	13.9	28.5		16.7	26.1	2.29	21.57%	-363.02%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		24.1	26.1	18	16.7	Outlier					

CETIS Analytical Report

Report Date: 29 Nov-17 10:26 (p 161 of 161)
Test Code: 29525Nv-PAH | 15-7775-1794

Bioaccumulation Evaluation - PAHs - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-9696-3730		Endpoint: Pyrene					CETIS Version: CETISv1.9.2				
Analyzed: 27 Nov-17 20:39		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 failed pyrene				161.94%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	5.64	2.13	7.42	4	CDF	0.0024	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.31	2.29	0.0442	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		963.931		963.931		1	31.8	4.9E-04	Significant Effect		
Error		242.51		30.3137		8					
Total		1206.44				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1200	23.2	4.2E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.808	0.741	0.0183	Normal Distribution			
Pyrene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86		4.38	4.94	0.1	4.90%	0.00%
29517-008		5	24.2	14.6	33.9		16.7	36.2	3.48	32.14%	-428.36%
Pyrene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		24.1	26.1	18	16.7	36.2					

28 day *Macoma nasuta*
Sediment Bioaccumulation Evaluation

Body Burden Data and Statistical Analysis Reports

Pesticides

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
cis-Chlordane	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
trans-Chlordane	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
cis-Nonachlor	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
trans-Nonachlor	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
Oxychlordane	0.965	U	0.901	U	0.906	U	0.865	U	0.940	U
Total Chlordanes	2.897		2.701		2.718		2.593		2.820	
4,4'-DDT	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
4,4'-DDD	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
4,4'-DDE	0.483	U	0.458		0.453	U	0.466		0.470	U
Total DDT	1.449		1.358		1.359		1.330		1.410	
Dieldrin	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
alpha-Endosulfan	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
beta-Endosulfan	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
Endosulfans	0.966		0.900		0.906		0.864		0.940	
Endrin	1.970		0.480		1.720		0.503		6.140	
Heptachlor	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
Heptachlor epoxide	0.965	U	0.901	U	0.906	U	0.865	U	0.940	U
Hexachlorobenzene	0.965	U	0.901	U	0.906	U	0.865	U	0.940	U
Lindane	0.483	U	0.450	U	0.453	U	0.432	U	0.470	U
Methoxychlor	4.830	U	4.500	U	4.530	U	4.320	U	4.700	U
Toxaphene	24.20	U	22.60	U	22.70	U	21.70	U	23.60	U

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 1									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
cis-Chlordane	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
trans-Chlordane	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
cis-Nonachlor	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
trans-Nonachlor	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
Oxychlordane	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
Total Chlordanes	2.664		2.538		2.622		2.856		2.802	
4,4'-DDT	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
4,4'-DDD	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
4,4'-DDE	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
Total DDT	1.332		1.269		1.311		1.428		1.401	
Dieldrin	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
alpha-Endosulfan	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
beta-Endosulfan	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
Endosulfans	0.888		0.846		0.874		0.952		0.934	
Endrin	0.775		0.677		0.732		0.860		0.771	
Heptachlor	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
Heptachlor epoxide	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
Hexachlorobenzene	0.888	U	0.846	U	0.874	U	0.952	U	0.934	U
Lindane	0.444	U	0.423	U	0.437	U	0.476	U	0.467	U
Methoxychlor	4.440	U	4.230	U	4.370	U	4.760	U	4.670	U
Toxaphene	22.30	U	21.20	U	21.90	U	23.90	U	23.40	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
cis-Chlordane	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
trans-Chlordane	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
cis-Nonachlor	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
trans-Nonachlor	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
Oxychlordane	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
Total Chlordanes	2.664		2.826		2.615		2.917		2.635	
4,4'-DDT	1.330		0.471	U	0.436	U	0.486	U	0.439	U
4,4'-DDD	1.960		0.471	U	0.436	U	0.486	U	0.439	U
4,4'-DDE	2.110		0.560		0.436	U	0.486	U	0.729	
Total DDT	5.400		1.502		1.308		1.458		1.607	
Dieldrin	1.260		0.471	U	0.436	U	0.486	U	0.439	U
alpha-Endosulfan	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
beta-Endosulfan	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
Endosulfans	0.888		0.942		0.872		0.972		0.878	
Endrin	1.710		0.610		0.438		1.900		0.688	
Heptachlor	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
Heptachlor epoxide	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
Hexachlorobenzene	0.888	U	0.942	U	0.871	U	0.973	U	0.879	U
Lindane	0.444	U	0.471	U	0.436	U	0.486	U	0.439	U
Methoxychlor	4.440	U	4.710	U	4.360	U	4.860	U	4.390	U
Toxaphene	22.30	U	23.60	U	21.90	U	24.40	U	22.00	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 3									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
cis-Chlordane	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
trans-Chlordane	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
cis-Nonachlor	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
trans-Nonachlor	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
Oxychlordane	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
Total Chlordanes	2.826		2.725		2.543		2.976		2.814	
4,4'-DDT	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
4,4'-DDD	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
4,4'-DDE	0.471	U	0.454	U	0.512		0.688		0.469	U
Total DDT	1.413		1.362		1.360		1.680		1.407	
Dieldrin	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
alpha-Endosulfan	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
beta-Endosulfan	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
Endosulfans	0.942		0.908		0.848		0.992		0.938	
Endrin	0.761		0.454	U	2.160		1.780		21.500	
Heptachlor	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
Heptachlor epoxide	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
Hexachlorobenzene	0.942	U	0.909	U	0.847	U	0.992	U	0.938	U
Lindane	0.471	U	0.454	U	0.424	U	0.496	U	0.469	U
Methoxychlor	4.710	U	4.540	U	4.240	U	4.960	U	4.690	U
Toxaphene	23.60	U	22.80	U	21.30	U	24.90	U	23.50	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
cis-Chlordane	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
trans-Chlordane	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
cis-Nonachlor	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
trans-Nonachlor	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
Oxychlordane	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
Total Chlordanes	2.538		2.622		2.826		2.538		2.958	
4,4'-DDT	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
4,4'-DDD	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
4,4'-DDE	0.494		0.437	U	0.565		0.700		0.493	U
Total DDT	1.340		1.311		1.507		1.546		1.479	
Dieldrin	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
alpha-Endosulfan	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
beta-Endosulfan	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
Endosulfans	0.846		0.874		0.942		0.846		0.986	
Endrin	0.678		5.600		0.471	U	6.340		0.993	
Heptachlor	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
Heptachlor epoxide	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
Hexachlorobenzene	0.846	U	0.874	U	0.942	U	0.846	U	0.986	U
Lindane	0.423	U	0.437	U	0.471	U	0.423	U	0.493	U
Methoxychlor	4.230	U	4.370	U	4.710	U	4.230	U	4.930	U
Toxaphene	21.20	U	21.90	U	23.60	U	21.20	U	24.80	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
cis-Chlordane	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
trans-Chlordane	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
cis-Nonachlor	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
trans-Nonachlor	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
Oxychlordane	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
Total Chlordanes	2.556		2.531		2.508		2.651		2.508	
4,4'-DDT	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
4,4'-DDD	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
4,4'-DDE	0.620		0.659		0.718		1.180		0.732	
Total DDT	1.472		1.503		1.554		2.064		1.568	
Dieldrin	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
alpha-Endosulfan	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
beta-Endosulfan	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
Endosulfans	0.852		0.844		0.836		0.884		0.836	
Endrin	0.536		0.957		0.818		0.670		0.561	
Heptachlor	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
Heptachlor epoxide	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
Hexachlorobenzene	0.852	U	0.843	U	0.836	U	0.883	U	0.836	U
Lindane	0.426	U	0.422	U	0.418	U	0.442	U	0.418	U
Methoxychlor	4.260	U	4.220	U	4.180	U	4.420	U	4.180	U
Toxaphene	21.40	U	21.20	U	21.00	U	22.20	U	21.00	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 6									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
cis-Chlordane	0.492		0.458		0.835		0.468	U	0.792	
trans-Chlordane	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
cis-Nonachlor	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
trans-Nonachlor	0.457	U	0.453	U	0.434	U	0.468	U	0.865	
Oxychlordane	0.914	U	0.906	U	0.868	U	0.936	U	0.921	U
Total Chlordanes	2.777		2.723		3.005		2.808		3.498	
4,4'-DDT	0.848		0.478		0.547		1.520		0.987	
4,4'-DDD	0.553		0.453	U	0.492		0.468	U	0.460	U
4,4'-DDE	1.500		1.300		1.690		1.790		1.450	
Total DDT	2.901		2.231		2.729		3.778		2.897	
Dieldrin	0.743		0.666		0.853		0.772		0.536	
alpha-Endosulfan	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
beta-Endosulfan	1.580		0.453	U	0.434	U	0.468	U	1.280	
Endosulfans	2.037		0.906		0.868		0.936		1.740	
Endrin	0.847		0.907		1.710		0.781		0.544	
Heptachlor	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
Heptachlor epoxide	0.914	U	0.906	U	0.868	U	0.936	U	0.921	U
Hexachlorobenzene	0.914	U	0.906	U	0.868	U	0.936	U	0.921	U
Lindane	0.457	U	0.453	U	0.434	U	0.468	U	0.460	U
Methoxychlor	4.570	U	4.530	U	4.340	U	4.680	U	4.600	U
Toxaphene	22.90	U	22.70	U	21.80	U	23.50	U	23.10	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
cis-Chlordane	0.586		0.432	U	1.160		0.473	U	0.467	U
trans-Chlordane	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
cis-Nonachlor	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
trans-Nonachlor	0.625		0.432	U	0.438	U	1.580		0.674	
Oxychlordane	0.840	U	0.864	U	0.877	U	0.947	U	0.934	U
Total Chlordanes	2.891		2.592		3.351		3.946		3.009	
4,4'-DDT	0.950		0.820		0.597		1.340		0.848	
4,4'-DDD	0.484		0.432	U	0.438	U	0.473	U	0.467	U
4,4'-DDE	1.570		1.180		1.190		1.360		1.170	
Total DDT	3.004		2.432		2.225		3.173		2.485	
Dieldrin	0.865		0.568		0.438	U	0.722		0.552	
alpha-Endosulfan	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
beta-Endosulfan	1.480		0.432	U	1.840		2.180		0.467	U
Endosulfans	1.900		0.864		2.278		2.653		0.934	
Endrin	0.529		0.522		1.120		12.100		3.740	
Heptachlor	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
Heptachlor epoxide	0.840	U	0.864	U	0.877	U	0.947	U	0.934	U
Hexachlorobenzene	0.840	U	0.864	U	0.877	U	0.947	U	0.934	U
Lindane	0.420	U	0.432	U	0.438	U	0.473	U	0.467	U
Methoxychlor	4.200	U	4.320	U	4.380	U	4.730	U	4.670	U
Toxaphene	21.10	U	21.70	U	22.00	U	23.80	U	23.40	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

Concentrations of COCs in *M. nasuta*
New Haven Harbor FNP, New Haven, C

CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
cis-Chlordane	0.500		0.450	U	0.542		0.422	U	0.459	U
trans-Chlordane	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
cis-Nonachlor	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
trans-Nonachlor	1.310		1.620		1.600		0.422	U	0.459	U
Oxychlordane	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
Total Chlordanes	3.586		3.871		4.018		2.531		2.753	
4,4'-DDT	1.090		0.450	U	1.320		0.746		0.908	
4,4'-DDD	0.444	U	3.270		0.469	U	1.380		0.459	U
4,4'-DDE	1.220		1.410		0.916		0.852		0.767	
Total DDT	2.754		5.130		2.705		2.978		2.134	
Dieldrin	0.446		0.487		0.498		0.435		0.651	
alpha-Endosulfan	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
beta-Endosulfan	0.444	U	1.400		0.469	U	0.422	U	0.459	U
Endosulfans	0.888		1.850		0.938		0.844		0.918	
Endrin	7.810		2.520		1.260		4.620		12.400	
Heptachlor	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
Heptachlor epoxide	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
Hexachlorobenzene	0.888	U	0.901	U	0.938	U	0.843	U	0.917	U
Lindane	0.444	U	0.450	U	0.469	U	0.422	U	0.459	U
Methoxychlor	4.440	U	4.500	U	4.690	U	4.220	U	4.590	U
Toxaphene	22.30	U	22.60	U	23.50	U	21.20	U	23.00	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below L

NA Not Analyzed

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:55 (p 1 of 2)

Test Code/ID: 03-7604-1995/29524Mn-Pest

Bioaccumulation Evaluation - Pesticides - Macoma																							EnviroSystems, Inc.	
Start Date:		29 Aug-17		Species:		Macoma nasuta		Sample Code:		29524-000														
End Date:		26 Sep-17		Protocol:		US ACE NED RIM (2004)		Sample Source:		New Haven Harbor FNP -2017														
Sample Date:		29 Aug-17		Material:		Laboratory Control Sediment		Sample Station:		Laboratory Control - 29524														
Sample	Rep	Pos	4-4'-DDD	4-4'-DDE	4-4'-DDT	aldrin	alpha-chlordane	alpha-BHC	beta-BHC	cis-Nonachlor	delta-BHC	Dieldrin	endosulfan I	endosulfan II	endrin	gamma-BHC (Lindane)	gamma-chlordane	heptachlor	heptachlor epoxide	hexachlorobenzene	Methoxychlor	oxychlordane	toxaphene	trans-nonachlor
29524-000	1	5																						
29524-000	2	18																						
29524-000	3	26																						
29524-000	4	31																						
29524-000	5	49																						
29517-009	1	7	0.483	0.483	0.483	0.483	0.483			0.483		0.483	0.483	0.483	1.97	0.483	0.483	0.483	0.965	0.965	4.83	0.965	24.2	0.483
29517-009	2	11	0.45	0.458	0.45	0.45	0.45			0.45		0.45	0.45	0.45	0.48	0.45	0.45	0.45	0.901	0.901	4.5	0.901	22.6	0.45
29517-009	3	29	0.453	0.453	0.453	0.453	0.453			0.453		0.453	0.453	0.453	1.72	0.453	0.453	0.453	0.906	0.906	4.53	0.906	22.7	0.453
29517-009	4	34	0.432	0.466	0.432	0.432	0.432			0.432		0.432	0.432	0.432	0.503	0.432	0.432	0.432	0.865	0.865	4.32	0.865	21.7	0.432
29517-009	5	44	0.47	0.47	0.47	0.47	0.47			0.47		0.47	0.47	0.47	6.14	0.47	0.47	0.47	0.94	0.94	4.7	0.94	23.6	0.47
29517-001	1	9	0.444	0.444	0.444	0.444	0.444			0.444		0.444	0.444	0.444	0.775	0.444	0.444	0.444	0.888	0.888	4.44	0.888	22.3	0.444
29517-001	2	16	0.423	0.423	0.423	0.423	0.423			0.423		0.423	0.423	0.423	0.677	0.423	0.423	0.423	0.846	0.846	4.23	0.846	21.2	0.423
29517-001	3	24	0.437	0.437	0.437	0.437	0.437			0.437		0.437	0.437	0.437	0.732	0.437	0.437	0.437	0.874	0.874	4.37	0.874	21.9	0.437
29517-001	4	35	0.476	0.476	0.476	0.476	0.476			0.476		0.476	0.476	0.476	6.86	0.476	0.476	0.476	0.952	0.952	4.76	0.952	23.9	0.476
29517-001	5	47	0.467	0.467	0.467	0.467	0.467			0.467		0.467	0.467	0.467	0.771	0.467	0.467	0.467	0.934	0.934	4.67	0.934	23.4	0.467
29517-002	1	1	1.96	2.11	1.33	0.444	0.444			0.444		1.26	0.444	0.444	1.71	0.444	0.444	0.444	0.888	0.888	4.44	0.888	22.3	0.444
29517-002	2	15	0.471	0.56	0.471	0.471	0.471			0.471		0.471	0.471	0.471	0.61	0.471	0.471	0.471	0.942	0.942	4.71	0.942	23.6	0.471
29517-002	3	21	0.436	0.436	0.436	0.436	0.436			0.436		0.436	0.436	0.436	0.438	0.436	0.436	0.436	0.871	0.871	4.36	0.871	21.9	0.436
29517-002	4	38	0.486	0.486	0.486	0.486	0.486			0.486		0.486	0.486	0.486	1.9	0.486	0.486	0.486	0.973	0.973	4.86	0.973	24.4	0.486
29517-002	5	42	0.439	0.729	0.439	0.439	0.439			0.439		0.439	0.439	0.439	0.688	0.439	0.439	0.439	0.879	0.879	4.39	0.879	22	0.439
29517-003	1	3	0.471	0.471	0.471	0.471	0.471			0.471		0.471	0.471	0.471	0.761	0.471	0.471	0.471	0.942	0.942	4.71	0.942	23.6	0.471
29517-003	2	17	0.454	0.454	0.454	0.454	0.454			0.454		0.454	0.454	0.454	0.454	0.454	0.454	0.454	0.909	0.909	4.54	0.909	22.8	0.454
29517-003	3	28	0.424	0.512	0.424	0.424	0.424			0.424		0.424	0.424	0.424	2.16	0.424	0.424	0.424	0.847	0.847	4.24	0.847	21.3	0.424
29517-003	4	37	0.496	0.688	0.496	0.496	0.496			0.496		0.496	0.496	0.496	1.78	0.496	0.496	0.496	0.992	0.992	4.96	0.992	24.9	0.496
29517-003	5	48	0.469	0.469	0.469	0.469	0.469			0.469		0.469	0.469	0.469	21.5	0.469	0.469	0.469	0.938	0.938	4.69	0.938	23.5	0.469
29517-004	1	6	0.423	0.494	0.423	0.423	0.423			0.423		0.423	0.423	0.423	0.678	0.423	0.423	0.423	0.846	0.846	4.23	0.846	21.2	0.423
29517-004	2	13	0.437	0.437	0.437	0.437	0.437			0.437		0.437	0.437	0.437	5.6	0.437	0.437	0.437	0.874	0.874	4.37	0.874	21.9	0.437
29517-004	3	23	0.471	0.565	0.471	0.471	0.471			0.471		0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.942	0.942	4.71	0.942	23.6	0.471
29517-004	4	33	0.423	0.7	0.423	0.423	0.423			0.423		0.423	0.423	0.423	6.34	0.423	0.423	0.423	0.846	0.846	4.23	0.846	21.2	0.423

002-158-534-3

CETIS™ v1.9.3.0

Analyst: _____ QA: _____

New Haven Harbor FNP Tier III Sediment Evaluation. 28 day Toxicity and Bioaccumulation Evaluation.
US ACE New England District. ESI Studies 29524/29525. August 2017.

Data Appendix Page 1013 of 1406

CETIS Test Data Worksheet

Report Date: 14 Nov-17 14:55 (p 2 of 2)

Test Code/ID: 03-7604-1995/29524Mn-Pest

Sample	Rep	Pos	4,4'-DDD	4,4'-DDE	4,4'-DDT	aldrin	alpha-chlordane	alpha-BHC	beta-BHC	cis-Nonachlor	delta-BHC	Dieldrin	endosulfan I	endosulfan II	endrin	gamma-BHC (Lindane)	gamma-chlordane	heptachlor	heptachlor epoxide	hexachlorobenzene	Methoxychlor	oxychlordane	toxaphene	trans-nonachlor
29517-004	5	43	0.493	0.493	0.493	0.493	0.493			0.493		0.493	0.493	0.493	0.993	0.493	0.493	0.493	0.986	0.986	4.93	0.986	24.8	0.493
29517-005	1	4	0.426	0.62	0.426	0.426	0.426			0.426		0.426	0.426	0.426	0.536	0.426	0.426	0.426	0.852	0.852	4.26	0.852	21.4	0.426
29517-005	2	12	0.422	0.659	0.422	0.422	0.422			0.422		0.422	0.422	0.422	0.957	0.422	0.422	0.422	0.843	0.843	4.22	0.843	21.2	0.422
29517-005	3	30	0.418	0.718	0.418	0.418	0.418			0.418		0.418	0.418	0.418	0.818	0.418	0.418	0.418	0.836	0.836	4.18	0.836	21	0.418
29517-005	4	39	0.442	1.18	0.442	0.442	0.442			0.442		0.442	0.442	0.442	0.67	0.442	0.442	0.442	0.883	0.883	4.42	0.883	22.2	0.442
29517-005	5	41	0.418	0.732	0.418	0.418	0.418			0.418		0.418	0.418	0.418	0.561	0.418	0.418	0.418	0.836	0.836	4.18	0.836	21	0.418
29517-006	1	2	0.553	1.5	0.848	0.457	0.492			0.457		0.743	0.457	1.58	0.847	0.457	0.457	0.457	0.914	0.914	4.57	0.914	22.9	0.457
29517-006	2	14	0.453	1.3	0.478	0.453	0.458			0.453		0.666	0.453	0.453	0.907	0.453	0.453	0.453	0.906	0.906	4.53	0.906	22.7	0.453
29517-006	3	25	0.492	1.69	0.547	0.434	0.835			0.434		0.853	0.434	0.434	1.71	0.434	0.434	0.434	0.868	0.868	4.34	0.868	21.8	0.434
29517-006	4	40	0.468	1.79	1.52	0.468	0.468			0.468		0.772	0.468	0.468	0.781	0.468	0.468	0.468	0.936	0.936	4.68	0.936	23.5	0.468
29517-006	5	46	0.46	1.45	0.987	0.46	0.792			0.46		0.536	0.46	1.28	0.544	0.46	0.46	0.46	0.921	0.921	4.6	0.921	23.1	0.865
59517-007	1	8	0.484	1.57	0.95	0.42	0.586			0.42		0.865	0.42	1.48	0.529	0.42	0.42	0.42	0.84	0.84	4.2	0.84	21.1	0.625
59517-007	2	20	0.432	1.18	0.82	0.432	0.432			0.432		0.568	0.432	0.432	0.522	0.432	0.432	0.432	0.864	0.864	4.32	0.864	21.7	0.432
59517-007	3	27	0.438	1.19	0.597	0.438	1.16			0.438		0.438	0.438	1.84	1.12	0.438	0.438	0.438	0.877	0.877	4.38	0.877	22	0.438
59517-007	4	32	0.473	1.36	1.34	0.473	0.473			0.473		0.722	0.473	2.18	12.1	0.473	0.473	0.473	0.947	0.947	4.73	0.947	23.8	1.58
59517-007	5	45	0.467	1.17	0.848	0.467	0.467			0.467		0.552	0.467	0.467	3.74	0.467	0.467	0.467	0.934	0.934	4.67	0.934	23.4	0.674
29517-008	1	10	0.444	1.22	1.09	0.444	0.5			0.444		0.446	0.444	0.444	7.81	0.444	0.444	0.444	0.888	0.888	4.44	0.888	22.3	1.31
29517-008	2	19	3.27	1.41	0.45	0.45	0.45			0.45		0.487	0.45	1.4	2.52	0.45	0.45	0.45	0.901	0.901	4.5	0.901	22.6	1.62
29517-008	3	22	0.469	0.916	1.32	0.469	0.542			0.469		0.498	0.469	0.469	1.26	0.469	0.469	0.469	0.938	0.938	4.69	0.938	23.5	1.6
29517-008	4	36	1.38	0.852	0.746	0.422	0.422			0.422		0.435	0.422	0.422	4.62	0.422	0.422	0.422	0.843	0.843	4.22	0.843	21.2	0.422
29517-008	5	50	0.459	0.767	0.908	0.459	0.459			0.459		0.651	0.459	0.459	12.4	0.459	0.459	0.459	0.917	0.917	4.59	0.917	23	0.459

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma					EnviroSystems, Inc.	
Batch ID:	07-3726-1456	Test Type:	Bioaccumulation - Pesticides	Analyst:	Nancy Roka	
Start Date:	29 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	26 Sep-17	Species:	Macoma nasuta	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
07-5731-0910	4-4'-DDD	Equal Variance t Two-Sample Test	0.7257	29517-001	passed 4-4'-ddd	
14-0978-4036	4-4'-DDD	Equal Variance t Two-Sample Test	0.4895	29517-002	passed 4-4'-ddd	
17-8214-1190	4-4'-DDD	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-002	passed 4-4'-ddd	
03-0362-9347	4-4'-DDD	Equal Variance t Two-Sample Test	0.3664	29517-003	passed 4-4'-ddd	
12-3288-2343	4-4'-DDD	Equal Variance t Two-Sample Test	0.6837	29517-004	passed 4-4'-ddd	
09-7259-8830	4-4'-DDD	Equal Variance t Two-Sample Test	0.9946	29517-005	passed 4-4'-ddd	
06-1438-5616	4-4'-DDD	Equal Variance t Two-Sample Test	0.1043	29517-006	passed 4-4'-ddd	
17-9822-8769	4-4'-DDD	Equal Variance t Two-Sample Test	0.4654	59517-007	passed 4-4'-ddd	
05-9116-7370	4-4'-DDD	Wilcoxon Rank Sum Two-Sample Test	0.3651	29517-008	passed 4-4'-ddd	
12-9044-6075	4-4'-DDD	Wilcoxon Rank Sum Two-Sample Test	0.2103	29517-008	passed 4-4'-ddd	
12-0436-4722	4-4'-DDE	Equal Variance t Two-Sample Test	0.9146	29517-001	passed 4-4'-dde	
00-6306-0103	4-4'-DDE	Unequal Variance t Two-Sample Test	0.1349	29517-002	passed 4-4'-dde	
20-2130-6773	4-4'-DDE	Wilcoxon Rank Sum Two-Sample Test	0.0754	29517-002	passed 4-4'-dde	
09-7203-5606	4-4'-DDE	Equal Variance t Two-Sample Test	0.2125	29517-003	passed 4-4'-dde	
19-4286-7874	4-4'-DDE	Wilcoxon Rank Sum Two-Sample Test	0.1548	29517-003	passed 4-4'-dde	
19-3726-3478	4-4'-DDE	Equal Variance t Two-Sample Test	0.1150	29517-004	passed 4-4'-dde	
16-9770-7142	4-4'-DDE	Unequal Variance t Two-Sample Test	0.0954	29517-004	passed 4-4'-dde	
05-6941-3364	4-4'-DDE	Equal Variance t Two-Sample Test	1.9E-05	29517-005	failed 4-4'-dde	
08-8320-0156	4-4'-DDE	Wilcoxon Rank Sum Two-Sample Test	0.0040	29517-005	failed 4-4'-dde	
13-9514-8455	4-4'-DDE	Unequal Variance t Two-Sample Test	1.2E-04	29517-006	failed 4-4'-dde	
15-3323-4326	4-4'-DDE	Unequal Variance t Two-Sample Test	2.3E-04	59517-007	failed 4-4'-dde	
20-3664-0525	4-4'-DDE	Unequal Variance t Two-Sample Test	2.2E-04	59517-007	failed 4-4'-dde	
19-6607-6068	4-4'-DDE	Unequal Variance t Two-Sample Test	0.0048	29517-008	failed 4-4'-dde	
05-6502-3491	4-4'-DDT	Equal Variance t Two-Sample Test	0.7257	29517-001	passed 4-4'-ddt	
08-8229-8586	4-4'-DDT	Equal Variance t Two-Sample Test	0.4895	29517-002	passed 4-4'-ddt	
06-1827-8726	4-4'-DDT	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-002	passed 4-4'-ddt	
11-7023-9733	4-4'-DDT	Equal Variance t Two-Sample Test	0.3664	29517-003	passed 4-4'-ddt	

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Bioaccumulation Evaluation - Pesticides - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
11-7722-1007	4-4'-DDT	Equal Variance t Two-Sample Test	0.6837	29517-004 passed 4-4'-ddt
20-4213-3943	4-4'-DDT	Equal Variance t Two-Sample Test	0.9946	29517-005 passed 4-4'-ddt
13-1010-0593	4-4'-DDT	Unequal Variance t Two-Sample Test	0.0442	29517-006 failed 4-4'-ddt
19-2705-8421	4-4'-DDT	Unequal Variance t Two-Sample Test	0.0621	29517-006 passed 4-4'-ddt
02-1416-1657	4-4'-DDT	Unequal Variance t Two-Sample Test	0.0103	59517-007 failed 4-4'-ddt
17-2645-4290	4-4'-DDT	Unequal Variance t Two-Sample Test	0.0095	59517-007 failed 4-4'-ddt
11-2831-5530	4-4'-DDT	Unequal Variance t Two-Sample Test	0.0200	29517-008 failed 4-4'-ddt
01-4324-9486	aldrin	Equal Variance t Two-Sample Test	0.7257	29517-001 passed aldrin
20-1361-7608	aldrin	Equal Variance t Two-Sample Test	0.5698	29517-002 passed aldrin
02-5413-7539	aldrin	Equal Variance t Two-Sample Test	0.3664	29517-003 passed aldrin
17-5034-3586	aldrin	Equal Variance t Two-Sample Test	0.6837	29517-004 passed aldrin
03-3377-9525	aldrin	Equal Variance t Two-Sample Test	0.9946	29517-005 passed aldrin
19-5928-6541	aldrin	Equal Variance t Two-Sample Test	0.6166	29517-006 passed aldrin
00-9351-7144	aldrin	Equal Variance t Two-Sample Test	0.7926	59517-007 passed aldrin
08-4098-0609	aldrin	Equal Variance t Two-Sample Test	0.7613	29517-008 passed aldrin
18-3971-7329	alpha chlordane	Equal Variance t Two-Sample Test	0.7257	29517-001 passed alpha chlordane (trans)
01-8932-2242	alpha chlordane	Equal Variance t Two-Sample Test	0.5698	29517-002 passed alpha chlordane (trans)
17-5435-2336	alpha chlordane	Equal Variance t Two-Sample Test	0.3664	29517-003 passed alpha chlordane (trans)
06-0326-6903	alpha chlordane	Equal Variance t Two-Sample Test	0.6837	29517-004 passed alpha chlordane (trans)
00-6962-5083	alpha chlordane	Equal Variance t Two-Sample Test	0.9946	29517-005 passed alpha chlordane (trans)
16-8917-5468	alpha chlordane	Unequal Variance t Two-Sample Test	0.0736	29517-006 passed alpha chlordane (trans)
09-9714-8997	alpha chlordane	Equal Variance t Two-Sample Test	0.1687	59517-007 passed alpha chlordane (trans)
07-5313-0983	alpha chlordane	Wilcoxon Rank Sum Two-Sample Test	0.1667	59517-007 passed alpha chlordane (trans)
12-2232-9549	alpha chlordane	Equal Variance t Two-Sample Test	0.2380	29517-008 passed alpha chlordane (trans)
01-6545-6674	cis-Nonachlor	Equal Variance t Two-Sample Test	0.7257	29517-001 passed cis-nonachlor
07-4929-3122	cis-Nonachlor	Equal Variance t Two-Sample Test	0.5698	29517-002 passed cis-nonachlor
19-0877-3797	cis-Nonachlor	Equal Variance t Two-Sample Test	0.3664	29517-003 passed cis-nonachlor
15-2866-7517	cis-Nonachlor	Equal Variance t Two-Sample Test	0.6837	29517-004 passed cis-nonachlor
08-4181-5341	cis-Nonachlor	Equal Variance t Two-Sample Test	0.9946	29517-005 passed cis-nonachlor
20-5367-3112	cis-Nonachlor	Equal Variance t Two-Sample Test	0.6166	29517-006 passed cis-nonachlor
13-7937-9170	cis-Nonachlor	Equal Variance t Two-Sample Test	0.7926	59517-007 passed cis-nonachlor
02-5147-5332	cis-Nonachlor	Equal Variance t Two-Sample Test	0.7613	29517-008 passed cis-nonachlor
06-2325-2637	Dieldrin	Equal Variance t Two-Sample Test	0.7257	29517-001 passed dieldrin
14-6259-8150	Dieldrin	Equal Variance t Two-Sample Test	0.4895	29517-002 passed dieldrin
02-9725-0639	Dieldrin	Wilcoxon Rank Sum Two-Sample Test	0.2738	29517-002 passed dieldrin
12-8236-4663	Dieldrin	Equal Variance t Two-Sample Test	0.3664	29517-003 passed dieldrin
14-5583-1727	Dieldrin	Equal Variance t Two-Sample Test	0.6837	29517-004 passed dieldrin
10-0527-9366	Dieldrin	Equal Variance t Two-Sample Test	0.9946	29517-005 passed dieldrin
12-5385-1974	Dieldrin	Unequal Variance t Two-Sample Test	0.0046	29517-006 failed dieldrin
02-4684-7912	Dieldrin	Unequal Variance t Two-Sample Test	0.0419	59517-007 failed dieldrin
07-0526-8609	Dieldrin	Equal Variance t Two-Sample Test	0.1412	29517-008 passed dieldrin
10-4485-2684	Dieldrin	Equal Variance t Two-Sample Test	0.3057	29517-008 passed dieldrin
18-3929-0494	endosulfan I	Equal Variance t Two-Sample Test	0.7257	29517-001 passed endosulfan i
20-8465-4467	endosulfan I	Equal Variance t Two-Sample Test	0.5698	29517-002 passed endosulfan i
14-5928-3008	endosulfan I	Equal Variance t Two-Sample Test	0.3664	29517-003 passed endosulfan i
04-9954-1329	endosulfan I	Equal Variance t Two-Sample Test	0.6837	29517-004 passed endosulfan i
18-1335-4980	endosulfan I	Equal Variance t Two-Sample Test	0.9946	29517-005 passed endosulfan i
21-0752-0595	endosulfan I	Equal Variance t Two-Sample Test	0.6166	29517-006 passed endosulfan i
19-8059-2222	endosulfan I	Equal Variance t Two-Sample Test	0.7926	59517-007 passed endosulfan i
16-2782-2286	endosulfan I	Equal Variance t Two-Sample Test	0.7613	29517-008 passed endosulfan i
03-8889-1693	endosulfan II	Equal Variance t Two-Sample Test	0.7257	29517-001 passed endosulfan ii
04-9033-9345	endosulfan II	Equal Variance t Two-Sample Test	0.5698	29517-002 passed endosulfan ii
08-8280-2217	endosulfan II	Equal Variance t Two-Sample Test	0.3664	29517-003 passed endosulfan ii

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Bioaccumulation Evaluation - Pesticides - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
02-6511-0683	endosulfan II	Equal Variance t Two-Sample Test	0.6837	29517-004 passed endosulfan ii
02-5339-6442	endosulfan II	Equal Variance t Two-Sample Test	0.9946	29517-005 passed endosulfan ii
04-3587-0681	endosulfan II	Unequal Variance t Two-Sample Test	0.0951	29517-006 passed endosulfan ii
01-1583-0356	endosulfan II	Unequal Variance t Two-Sample Test	0.0413	59517-007 failed endosulfan ii
06-6664-5453	endosulfan II	Equal Variance t Two-Sample Test	0.7408	29517-008 passed endosulfan ii
14-6825-3142	endosulfan II	Wilcoxon Rank Sum Two-Sample Test	0.5794	29517-008 passed endosulfan ii
20-0032-7021	endrin	Wilcoxon Rank Sum Two-Sample Test	0.5000	29517-001 passed endrin
03-0037-2801	endrin	Equal Variance t Two-Sample Test	0.5774	29517-002 passed endrin
16-1859-9351	endrin	Equal Variance t Two-Sample Test	0.8287	29517-002 passed endrin
09-1749-0497	endrin	Equal Variance t Two-Sample Test	0.7494	29517-003 passed endrin
02-7612-2312	endrin	Wilcoxon Rank Sum Two-Sample Test	0.4206	29517-003 passed endrin
13-0437-1921	endrin	Equal Variance t Two-Sample Test	0.3521	29517-004 passed endrin
12-9066-5759	endrin	Equal Variance t Two-Sample Test	0.8803	29517-005 passed endrin
07-1930-9582	endrin	Wilcoxon Rank Sum Two-Sample Test	0.7262	29517-005 passed endrin
13-0373-0856	endrin	Equal Variance t Two-Sample Test	0.6872	29517-006 passed endrin
11-0938-0039	endrin	Wilcoxon Rank Sum Two-Sample Test	0.7262	29517-006 passed endrin
02-3330-1909	endrin	Equal Variance t Two-Sample Test	0.6852	59517-007 passed endrin
19-1243-7035	endrin	Equal Variance t Two-Sample Test	0.2857	59517-007 passed endrin
15-7511-5425	endrin	Equal Variance t Two-Sample Test	0.0768	29517-008 passed endrin
04-8012-3452	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.7257	29517-001 passed gamma-bhc (lindane)
21-3366-7682	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.5698	29517-002 passed gamma-bhc (lindane)
01-0616-2622	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.3664	29517-003 passed gamma-bhc (lindane)
13-4988-3304	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.6837	29517-004 passed gamma-bhc (lindane)
06-8657-2732	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.9946	29517-005 passed gamma-bhc (lindane)
09-9910-2120	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.6166	29517-006 passed gamma-bhc (lindane)
19-5805-6844	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.7926	59517-007 passed gamma-bhc (lindane)
08-9752-2524	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.7613	29517-008 passed gamma-bhc (lindane)
07-1787-6747	gamma-chlordane	Equal Variance t Two-Sample Test	0.7257	29517-001 passed gamma-chlordane (cis)
19-6447-8359	gamma-chlordane	Equal Variance t Two-Sample Test	0.5698	29517-002 passed gamma-chlordane (cis)
16-3689-0626	gamma-chlordane	Equal Variance t Two-Sample Test	0.3664	29517-003 passed gamma-chlordane (cis)
09-7228-8508	gamma-chlordane	Equal Variance t Two-Sample Test	0.6837	29517-004 passed gamma-chlordane (cis)
04-7445-6868	gamma-chlordane	Equal Variance t Two-Sample Test	0.9946	29517-005 passed gamma-chlordane (cis)
08-4012-7885	gamma-chlordane	Equal Variance t Two-Sample Test	0.6166	29517-006 passed gamma-chlordane (cis)
05-1513-1297	gamma-chlordane	Equal Variance t Two-Sample Test	0.7926	59517-007 passed gamma-chlordane (cis)
06-4264-0005	gamma-chlordane	Equal Variance t Two-Sample Test	0.7613	29517-008 passed gamma-chlordane (cis)
01-3008-0030	heptachlor	Equal Variance t Two-Sample Test	0.7257	29517-001 passed heptachlor
08-2561-8713	heptachlor	Equal Variance t Two-Sample Test	0.5698	29517-002 passed heptachlor
10-9404-1116	heptachlor	Equal Variance t Two-Sample Test	0.3664	29517-003 passed heptachlor
20-3848-5308	heptachlor	Equal Variance t Two-Sample Test	0.6837	29517-004 passed heptachlor
00-5195-4009	heptachlor	Equal Variance t Two-Sample Test	0.9946	29517-005 passed heptachlor
01-7168-6069	heptachlor	Equal Variance t Two-Sample Test	0.6166	29517-006 passed heptachlor
11-7692-8142	heptachlor	Equal Variance t Two-Sample Test	0.7926	59517-007 passed heptachlor
00-1589-3366	heptachlor	Equal Variance t Two-Sample Test	0.7613	29517-008 passed heptachlor
06-8562-7391	heptachlor epoxide	Equal Variance t Two-Sample Test	0.7297	29517-001 passed heptachlor epoxide
13-6352-3668	heptachlor epoxide	Equal Variance t Two-Sample Test	0.5701	29517-002 passed heptachlor epoxide
11-9599-4395	heptachlor epoxide	Equal Variance t Two-Sample Test	0.3684	29517-003 passed heptachlor epoxide
04-0226-7741	heptachlor epoxide	Equal Variance t Two-Sample Test	0.6866	29517-004 passed heptachlor epoxide
05-0929-4932	heptachlor epoxide	Equal Variance t Two-Sample Test	0.9953	29517-005 passed heptachlor epoxide
17-4733-9448	heptachlor epoxide	Equal Variance t Two-Sample Test	0.6180	29517-006 passed heptachlor epoxide
02-8720-6764	heptachlor epoxide	Equal Variance t Two-Sample Test	0.7918	59517-007 passed heptachlor epoxide
01-4786-7119	heptachlor epoxide	Equal Variance t Two-Sample Test	0.7676	29517-008 passed heptachlor epoxide
14-9658-9651	hexachlorobenzene	Equal Variance t Two-Sample Test	0.7297	29517-001 passed hexachlorobenzene
01-2667-0944	hexachlorobenzene	Equal Variance t Two-Sample Test	0.5701	29517-002 passed hexachlorobenzene

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Bioaccumulation Evaluation - Pesticides - Macoma				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
18-9712-7554	hexachlorobenzene	Equal Variance t Two-Sample Test	0.3684	29517-003 passed hexachlorobenzene
07-8793-9468	hexachlorobenzene	Equal Variance t Two-Sample Test	0.6866	29517-004 passed hexachlorobenzene
03-1340-7903	hexachlorobenzene	Equal Variance t Two-Sample Test	0.9953	29517-005 passed hexachlorobenzene
18-2844-8371	hexachlorobenzene	Equal Variance t Two-Sample Test	0.6180	29517-006 passed hexachlorobenzene
00-1833-3932	hexachlorobenzene	Equal Variance t Two-Sample Test	0.7918	59517-007 passed hexachlorobenzene
03-1732-5971	hexachlorobenzene	Equal Variance t Two-Sample Test	0.7676	29517-008 passed hexachlorobenzene
18-4857-1093	Methoxychlor	Equal Variance t Two-Sample Test	0.7257	29517-001 passed methoxychlor
14-9472-5130	Methoxychlor	Equal Variance t Two-Sample Test	0.5698	29517-002 passed methoxychlor
06-1620-0471	Methoxychlor	Equal Variance t Two-Sample Test	0.3664	29517-003 passed methoxychlor
11-3368-1608	Methoxychlor	Equal Variance t Two-Sample Test	0.6837	29517-004 passed methoxychlor
16-1834-0874	Methoxychlor	Equal Variance t Two-Sample Test	0.9946	29517-005 passed methoxychlor
09-9904-1731	Methoxychlor	Equal Variance t Two-Sample Test	0.6166	29517-006 passed methoxychlor
14-8335-7759	Methoxychlor	Equal Variance t Two-Sample Test	0.7926	59517-007 passed methoxychlor
08-4903-9448	Methoxychlor	Equal Variance t Two-Sample Test	0.7613	29517-008 passed methoxychlor
08-9371-6668	oxychlordane	Equal Variance t Two-Sample Test	0.7297	29517-001 passed oxychlordane
03-4678-9743	oxychlordane	Equal Variance t Two-Sample Test	0.5701	29517-002 passed oxychlordane
16-5511-0815	oxychlordane	Equal Variance t Two-Sample Test	0.3684	29517-003 passed oxychlordane
14-9628-8512	oxychlordane	Equal Variance t Two-Sample Test	0.6866	29517-004 passed oxychlordane
02-5041-9340	oxychlordane	Equal Variance t Two-Sample Test	0.9953	29517-005 passed oxychlordane
18-2913-9342	oxychlordane	Equal Variance t Two-Sample Test	0.6180	29517-006 passed oxychlordane
16-6674-8567	oxychlordane	Equal Variance t Two-Sample Test	0.7918	59517-007 passed oxychlordane
19-7984-2198	oxychlordane	Equal Variance t Two-Sample Test	0.7676	29517-008 passed oxychlordane
01-2348-3726	toxaphene	Equal Variance t Two-Sample Test	0.7303	29517-001 passed toxaphene
10-1694-3562	toxaphene	Equal Variance t Two-Sample Test	0.5702	29517-002 passed toxaphene
05-1936-3201	toxaphene	Equal Variance t Two-Sample Test	0.3654	29517-003 passed toxaphene
03-5721-9961	toxaphene	Equal Variance t Two-Sample Test	0.6856	29517-004 passed toxaphene
06-6851-1017	toxaphene	Equal Variance t Two-Sample Test	0.9945	29517-005 passed toxaphene
20-4811-3444	toxaphene	Equal Variance t Two-Sample Test	0.6177	29517-006 passed toxaphene
18-4480-0547	toxaphene	Equal Variance t Two-Sample Test	0.7856	59517-007 passed toxaphene
16-2951-4624	toxaphene	Equal Variance t Two-Sample Test	0.7652	29517-008 passed toxaphene
08-9575-4488	trans-nonachlor	Equal Variance t Two-Sample Test	0.7257	29517-001 passed trans-nonachlor
09-7593-9887	trans-nonachlor	Equal Variance t Two-Sample Test	0.5698	29517-002 passed trans-nonachlor
19-0987-4341	trans-nonachlor	Equal Variance t Two-Sample Test	0.3664	29517-003 passed trans-nonachlor
01-6795-7760	trans-nonachlor	Equal Variance t Two-Sample Test	0.6837	29517-004 passed trans-nonachlor
18-0820-0616	trans-nonachlor	Equal Variance t Two-Sample Test	0.9946	29517-005 passed trans-nonachlor
16-6164-9199	trans-nonachlor	Equal Variance t Two-Sample Test	0.6469	29517-006 passed trans-nonachlor
01-7212-7269	trans-nonachlor	Wilcoxon Rank Sum Two-Sample Test	0.3651	29517-006 passed trans-nonachlor
00-0986-8334	trans-nonachlor	Unequal Variance t Two-Sample Test	0.1369	59517-007 passed trans-nonachlor
15-7059-1789	trans-nonachlor	Wilcoxon Rank Sum Two-Sample Test	0.2302	59517-007 passed trans-nonachlor
08-2374-1209	trans-nonachlor	Unequal Variance t Two-Sample Test	0.0400	29517-008 failed trans-nonachlor

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Bioaccumulation Evaluation - Pesticides - Macoma											EnviroSystems, Inc.
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.758	-0.0761	1.59	0.436	1.96	0.301	0.672	88.61%	-65.73%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.485	0.435	0.536	0.453	0.553	0.0182	0.0407	8.38%	-6.03%
59517-007		5	0.459	0.431	0.487	0.432	0.484	0.0101	0.0227	4.94%	-0.26%
29517-008		5	1.2	-0.313	2.72	0.444	3.27	0.546	1.22	101.45%	-163.20%
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.453	0.483	0.00519	0.0116	2.49%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	3.56%
29517-002		5	0.864	-0.0114	1.74	0.436	2.11	0.315	0.705	81.60%	-85.45%
29517-003		5	0.519	0.398	0.639	0.454	0.688	0.0434	0.097	18.70%	-11.33%
29517-004		5	0.538	0.412	0.664	0.437	0.7	0.0454	0.101	18.86%	-15.41%
29517-005		5	0.782	0.5	1.06	0.62	1.18	0.102	0.227	29.05%	-67.77%
29517-006		5	1.55	1.3	1.79	1.3	1.79	0.0872	0.195	12.61%	-231.76%
59517-007		5	1.29	1.08	1.51	1.17	1.57	0.0774	0.173	13.37%	-177.68%
29517-008		5	1.03	0.696	1.37	0.767	1.41	0.121	0.271	26.26%	-121.67%
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.632	0.147	1.12	0.436	1.33	0.175	0.391	61.76%	-38.20%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.876	0.359	1.39	0.478	1.52	0.186	0.417	47.57%	-91.43%
59517-007		5	0.911	0.573	1.25	0.597	1.34	0.122	0.272	29.88%	-99.08%
29517-008		5	0.903	0.492	1.31	0.45	1.32	0.148	0.331	36.68%	-97.29%
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%

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Bioaccumulation Evaluation - Pesticides - Macoma											EnviroSystems, Inc.
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.609	0.376	0.842	0.458	0.835	0.0839	0.188	30.82%	-33.09%
59517-007		5	0.624	0.244	1	0.432	1.16	0.137	0.305	48.97%	-36.28%
29517-008		5	0.475	0.416	0.533	0.422	0.542	0.021	0.0469	9.88%	-3.72%
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.618	0.172	1.06	0.436	1.26	0.161	0.359	58.10%	-35.14%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.714	0.565	0.863	0.536	0.853	0.0536	0.12	16.79%	-56.03%
59517-007		5	0.629	0.423	0.835	0.438	0.865	0.0743	0.166	26.42%	-37.46%
29517-008		5	0.503	0.396	0.611	0.435	0.651	0.0388	0.0867	17.22%	-10.01%
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%

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Bioaccumulation Evaluation - Pesticides - Macoma											EnviroSystems, Inc.
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.843	0.165	1.52	0.434	1.58	0.244	0.546	64.81%	-84.22%
59517-007		5	1.28	0.29	2.27	0.432	2.18	0.357	0.797	62.31%	-179.68%
29517-008		5	0.639	0.11	1.17	0.422	1.4	0.19	0.426	66.67%	-39.60%
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	0.48	6.14	1.04	2.33	107.55%	0.00%
29517-001		5	1.96	-1.44	5.36	0.677	6.86	1.22	2.74	139.47%	9.23%
29517-002		5	1.07	0.224	1.91	0.438	1.9	0.305	0.681	63.70%	50.56%
29517-003		5	5.33	-5.93	16.6	0.454	21.5	4.05	9.07	170.06%	-146.51%
29517-004		5	2.82	-0.78	6.41	0.471	6.34	1.3	2.9	102.85%	-30.23%
29517-005		5	0.708	0.487	0.929	0.536	0.957	0.0796	0.178	25.13%	67.24%
29517-006		5	0.958	0.408	1.51	0.544	1.71	0.198	0.442	46.20%	55.71%
59517-007		5	3.6	-2.52	9.73	0.522	12.1	2.21	4.93	136.94%	-66.57%
29517-008		5	5.72	0.158	11.3	1.26	12.4	2	4.48	78.32%	-164.59%
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%

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Bioaccumulation Evaluation - Pesticides - Macoma											EnviroSystems, Inc.
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.454	0.439	0.47	0.434	0.468	0.00566	0.0127	2.79%	0.70%
59517-007		5	0.446	0.418	0.474	0.42	0.473	0.0103	0.0229	5.14%	2.53%
29517-008		5	0.449	0.427	0.471	0.422	0.469	0.00792	0.0177	3.95%	1.92%
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.32	4.83	0.0876	0.196	4.28%	0.00%
29517-001		5	4.49	4.22	4.76	4.23	4.76	0.0974	0.218	4.85%	1.79%
29517-002		5	4.55	4.28	4.83	4.36	4.86	0.0989	0.221	4.86%	0.52%
29517-003		5	4.63	4.3	4.96	4.24	4.96	0.118	0.264	5.71%	-1.14%
29517-004		5	4.49	4.11	4.88	4.23	4.93	0.14	0.313	6.96%	1.79%
29517-005		5	4.25	4.13	4.38	4.18	4.42	0.0445	0.0996	2.34%	7.08%
29517-006		5	4.54	4.39	4.7	4.34	4.68	0.0566	0.127	2.79%	0.70%
59517-007		5	4.46	4.18	4.74	4.2	4.73	0.103	0.229	5.14%	2.53%
29517-008		5	4.49	4.27	4.71	4.22	4.69	0.0792	0.177	3.95%	1.92%

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.865	0.965	0.0172	0.0384	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.846	0.952	0.0195	0.0436	4.85%	1.81%
29517-002		5	0.911	0.855	0.966	0.871	0.973	0.0199	0.0446	4.90%	0.52%
29517-003		5	0.926	0.86	0.992	0.847	0.992	0.0238	0.0531	5.74%	-1.11%
29517-004		5	0.899	0.821	0.976	0.846	0.986	0.028	0.0626	6.96%	1.81%
29517-005		5	0.85	0.826	0.874	0.836	0.883	0.00876	0.0196	2.30%	7.14%
29517-006		5	0.909	0.877	0.941	0.868	0.936	0.0114	0.0254	2.80%	0.70%
59517-007		5	0.892	0.835	0.95	0.84	0.947	0.0206	0.0461	5.17%	2.51%
29517-008		5	0.897	0.853	0.942	0.843	0.938	0.016	0.0357	3.98%	1.97%
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	21.7	24.2	0.432	0.966	4.21%	0.00%
29517-001		5	22.5	21.2	23.9	21.2	23.9	0.493	1.1	4.89%	1.83%
29517-002		5	22.8	21.5	24.2	21.9	24.4	0.495	1.11	4.84%	0.52%
29517-003		5	23.2	21.6	24.9	21.3	24.9	0.588	1.31	5.66%	-1.13%
29517-004		5	22.5	20.6	24.5	21.2	24.8	0.715	1.6	7.10%	1.83%
29517-005		5	21.4	20.7	22	21	22.2	0.223	0.498	2.33%	6.97%
29517-006		5	22.8	22	23.6	21.8	23.5	0.283	0.632	2.77%	0.70%
59517-007		5	22.4	21	23.8	21.1	23.8	0.515	1.15	5.14%	2.44%
29517-008		5	22.5	21.4	23.6	21.2	23.5	0.387	0.864	3.84%	1.92%
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.432	0.483	0.00876	0.0196	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.423	0.476	0.00974	0.0218	4.85%	1.79%
29517-002		5	0.455	0.428	0.483	0.436	0.486	0.00989	0.0221	4.86%	0.52%
29517-003		5	0.463	0.43	0.496	0.424	0.496	0.0118	0.0264	5.71%	-1.14%
29517-004		5	0.449	0.411	0.488	0.423	0.493	0.014	0.0313	6.96%	1.79%
29517-005		5	0.425	0.413	0.438	0.418	0.442	0.00445	0.00996	2.34%	7.08%
29517-006		5	0.535	0.306	0.765	0.434	0.865	0.0826	0.185	34.49%	-17.00%
59517-007		5	0.75	0.158	1.34	0.432	1.58	0.213	0.477	63.57%	-63.85%
29517-008		5	1.08	0.339	1.83	0.422	1.62	0.268	0.599	55.32%	-136.49%

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Bioaccumulation Evaluation - Pesticides - Macoma						EnviroSystems, Inc.
4-4'-DDD Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		1.96	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.553	0.453	0.492	0.468	0.46
59517-007		0.484	0.432	0.438	0.473	0.467
29517-008		0.444	3.27	0.469	1.38	0.459
4-4'-DDE Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.458	0.453	0.466	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		2.11	0.56	0.436	0.486	0.729
29517-003		0.471	0.454	0.512	0.688	0.469
29517-004		0.494	0.437	0.565	0.7	0.493
29517-005		0.62	0.659	0.718	1.18	0.732
29517-006		1.5	1.3	1.69	1.79	1.45
59517-007		1.57	1.18	1.19	1.36	1.17
29517-008		1.22	1.41	0.916	0.852	0.767
4-4'-DDT Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		1.33	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.848	0.478	0.547	1.52	0.987
59517-007		0.95	0.82	0.597	1.34	0.848
29517-008		1.09	0.45	1.32	0.746	0.908
aldrin Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459

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Bioaccumulation Evaluation - Pesticides - Macoma						EnviroSystems, Inc.
alpha chlordane		Detail				
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.492	0.458	0.835	0.468	0.792
59517-007		0.586	0.432	1.16	0.473	0.467
29517-008		0.5	0.45	0.542	0.422	0.459
cis-Nonachlor		Detail				
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459
Dieldrin		Detail				
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		1.26	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.743	0.666	0.853	0.772	0.536
59517-007		0.865	0.568	0.438	0.722	0.552
29517-008		0.446	0.487	0.498	0.435	0.651
endosulfan I		Detail				
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459

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Bioaccumulation Evaluation - Pesticides - Macoma						EnviroSystems, Inc.
endosulfan II Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		1.58	0.453	0.434	0.468	1.28
59517-007		1.48	0.432	1.84	2.18	0.467
29517-008		0.444	1.4	0.469	0.422	0.459
endrin Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	1.97	0.48	1.72	0.503	6.14
29517-001		0.775	0.677	0.732	6.86	0.771
29517-002		1.71	0.61	0.438	1.9	0.688
29517-003		0.761	0.454	2.16	1.78	21.5
29517-004		0.678	5.6	0.471	6.34	0.993
29517-005		0.536	0.957	0.818	0.67	0.561
29517-006		0.847	0.907	1.71	0.781	0.544
59517-007		0.529	0.522	1.12	12.1	3.74
29517-008		7.81	2.52	1.26	4.62	12.4
gamma-BHC (Lindane) Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459
gamma-chlordane Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459

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Bioaccumulation Evaluation - Pesticides - Macoma						EnviroSystems, Inc.
heptachlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.46
59517-007		0.42	0.432	0.438	0.473	0.467
29517-008		0.444	0.45	0.469	0.422	0.459
heptachlor epoxide Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
hexachlorobenzene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
Methoxychlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	4.83	4.5	4.53	4.32	4.7
29517-001		4.44	4.23	4.37	4.76	4.67
29517-002		4.44	4.71	4.36	4.86	4.39
29517-003		4.71	4.54	4.24	4.96	4.69
29517-004		4.23	4.37	4.71	4.23	4.93
29517-005		4.26	4.22	4.18	4.42	4.18
29517-006		4.57	4.53	4.34	4.68	4.6
59517-007		4.2	4.32	4.38	4.73	4.67
29517-008		4.44	4.5	4.69	4.22	4.59

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Bioaccumulation Evaluation - Pesticides - Macoma						EnviroSystems, Inc.
oxychlordane Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.965	0.901	0.906	0.865	0.94
29517-001		0.888	0.846	0.874	0.952	0.934
29517-002		0.888	0.942	0.871	0.973	0.879
29517-003		0.942	0.909	0.847	0.992	0.938
29517-004		0.846	0.874	0.942	0.846	0.986
29517-005		0.852	0.843	0.836	0.883	0.836
29517-006		0.914	0.906	0.868	0.936	0.921
59517-007		0.84	0.864	0.877	0.947	0.934
29517-008		0.888	0.901	0.938	0.843	0.917
toxaphene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	24.2	22.6	22.7	21.7	23.6
29517-001		22.3	21.2	21.9	23.9	23.4
29517-002		22.3	23.6	21.9	24.4	22
29517-003		23.6	22.8	21.3	24.9	23.5
29517-004		21.2	21.9	23.6	21.2	24.8
29517-005		21.4	21.2	21	22.2	21
29517-006		22.9	22.7	21.8	23.5	23.1
59517-007		21.1	21.7	22	23.8	23.4
29517-008		22.3	22.6	23.5	21.2	23
trans-nonachlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29524-000	LC					
29517-009	RS	0.483	0.45	0.453	0.432	0.47
29517-001		0.444	0.423	0.437	0.476	0.467
29517-002		0.444	0.471	0.436	0.486	0.439
29517-003		0.471	0.454	0.424	0.496	0.469
29517-004		0.423	0.437	0.471	0.423	0.493
29517-005		0.426	0.422	0.418	0.442	0.418
29517-006		0.457	0.453	0.434	0.468	0.865
59517-007		0.625	0.432	0.438	1.58	0.674
29517-008		1.31	1.62	1.6	0.422	0.459

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-5731-0910		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed 4-4'-ddd			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-8214-1190		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed 4-4'-ddd			122.19%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	24	n/a	0	8	Exact	0.2738	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.68	2.29	4.6E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.226202		0.226202		1	1	0.3464	Non-Significant Effect			
Error	1.80813		0.226017		8						
Total	2.03434				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1180	23.2	4.3E-06	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.652	0.741	2.3E-04	Non-Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.758	-0.0761	1.59	0.471	0.436	1.96	0.301	88.61%	-65.73%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		1.96	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-0362-9347		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed 4-4'-ddd				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.82	23.2	0.5760		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482		Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-3288-2343		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed 4-4'-ddd				6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7259-8830		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed 4-4'-ddd			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.86	23.2	0.2189	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.937	0.741	0.5204	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-1438-5616		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed 4-4'-ddd			8.20%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.37	1.86	0.038	8	CDF	0.1043	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.25	2.29	0.0632	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0019044		0.0019044		1	1.87	0.2086	Non-Significant Effect			
Error	0.008144		0.001018		8						
Total	0.0100484				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.31	23.2	0.1860	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.893	0.741	0.1829	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.485	0.435	0.536	0.468	0.453	0.553	0.0182	8.38%	-6.03%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.553	0.453	0.492	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-9822-8769		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed 4-4'-ddd				5.44%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.0896	1.86	0.025	8	CDF	0.4654	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.34	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		3.6E-06		3.6E-06		1	0.00803	0.9308	Non-Significant Effect		
Error		0.003588		0.0004485		8					
Total		0.0035916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.34	23.2	0.7835	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.91	0.741	0.2788	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.459	0.431	0.487	0.467	0.432	0.484	0.0101	4.94%	-0.26%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.484	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-9044-6075		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed 4-4'-ddd			222.09%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	23	n/a	0	8	Exact	0.2103	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.54	2.29	0.0054	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.39428		1.39428		1	1.87	0.2090	Non-Significant Effect			
Error	5.97371		0.746714		8						
Total	7.36799				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3900	23.2	4.0E-07	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.733	0.741	0.0022	Non-Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	1.2	-0.313	2.72	0.469	0.444	3.27	0.546	101.45%	-163.20%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	3.27	0.469	1.38	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-0436-4722		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed 4-4'-dde			4.40%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-1.5	1.86	0.021	8	CDF	0.9146	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.62	2.29	0.8660	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	2.26	0.1709	Non-Significant Effect		
Error		0.0024352		0.0003044		8					
Total		0.0031241				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.53	23.2	0.2497	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.965	0.741	0.8362	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	3.56%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-2130-6773		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed 4-4'-dde			125.87%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	20	n/a	0	8	Exact	0.0754	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.65	2.29	9.1E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.396408		0.396408		1	1.59	0.2423	Non-Significant Effect			
Error	1.98976		0.24872		8						
Total	2.38617				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3700	23.2	4.4E-07	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.692	0.741	7.0E-04	Non-Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-002		5	0.864	-0.0114	1.74	0.56	0.436	2.11	0.315	81.60%	-85.45%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-002		2.11	0.56	0.436	0.486	0.729					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7203-5606		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed 4-4'-dde				5.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.847	1.89	0.024	7	CDF	0.2125	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.000245		0.000245		1		0.717	0.4250	Non-Significant Effect		
Error	0.002391		0.0003416		7						
Total	0.002636				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.59	24.3	0.1750	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.922	0.701	0.4125	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-003		4	0.477	0.437	0.516	0.47	0.454	0.512	0.0124	5.22%	-2.25%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-003		0.471	0.454	0.512	Outlier	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-3726-3478		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed 4-4'-dde			9.66%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	1.31	1.89	0.045	7	CDF	0.1150	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.0021701		0.0021701		1		1.73	0.2300	Non-Significant Effect		
Error	0.0087868		0.0012553		7						
Total	0.0109569				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				20.4	24.3	0.0138	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.879	0.701	0.1515	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-004		4	0.497	0.414	0.581	0.493	0.437	0.565	0.0262	10.55%	-6.71%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-004		0.494	0.437	0.565	Outlier	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-8320-0156		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 failed 4-4'-dde			40.59%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005*	15	n/a	0	8	Exact	0.0040	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.63	2.29	0.0014		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.249324		0.249324		1	9.64	0.0146	Significant Effect			
Error	0.206911		0.0258638		8						
Total	0.456235				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			384	23.2	4.0E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.728	0.741	0.0019		Non-Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-005		5	0.782	0.5	1.06	0.718	0.62	1.18	0.102	29.05%	-67.77%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-005		0.62	0.659	0.718	1.18	0.732					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-9514-8455		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 failed 4-4'-dde			39.97%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	12.4	2.13	0.186	4	CDF	1.2E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.89	2.29	0.3640		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.916		2.916		1	153	1.7E-06	Significant Effect			
Error	0.152658		0.0190823		8						
Total	3.06866				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			283	23.2	7.4E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.926	0.741	0.4099		Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-006		5	1.55	1.3	1.79	1.5	1.3	1.79	0.0872	12.61%	-231.76%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-006		1.5	1.3	1.69	1.79	1.45					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3664-0525		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed 4-4'-dde			35.47%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	10.7	2.13	0.165	4	CDF	2.2E-04	Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.39	2.29	0.0241	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.71396		1.71396		1	114	5.2E-06	Significant Effect		
Error		0.120258		0.0150323		8					
Total		1.83422				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			223	23.2	1.2E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.836	0.741	0.0393	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
59517-007		5	1.29	1.08	1.51	1.19	1.17	1.57	0.0774	13.37%	-177.68%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
59517-007		1.57	1.18	1.19	1.36	1.17					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-6607-6068		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 failed 4-4'-dde			55.55%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	4.67	2.13	0.259	4	CDF	0.0048	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.08	2.29	0.1612		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.803723		0.803723		1	21.8	0.0016	Significant Effect			
Error	0.294842		0.0368552		8						
Total	1.09856				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			547	23.2	2.0E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.921	0.741	0.3650		Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.466	0.452	0.48	0.466	0.453	0.483	0.00519	2.49%	0.00%
29517-008		5	1.03	0.696	1.37	0.916	0.767	1.41	0.121	26.26%	-121.67%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.458	0.453	0.466	0.47					
29517-008		1.22	1.41	0.916	0.852	0.767					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-6502-3491		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed 4-4'-ddt				5.32%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.24	23.2	0.8414	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.918	0.741	0.3369	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-8229-8586		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed 4-4'-ddt				6.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	0.0273	1.89	0.028	7	CDF	0.4895	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.555E-07		3.555E-07		1	0.000747	0.9790	Non-Significant Effect			
Error	0.0033312		0.0004759		7						
Total	0.0033316				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.56	24.3	0.6594	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.914	0.701	0.3419	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		4	0.458	0.419	0.497	0.455	0.436	0.486	0.0122	5.35%	-0.09%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		Outlier	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-7023-9733		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed 4-4'-ddt			5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect		
Error		0.004324		0.0005405		8					
Total		0.0043916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-7722-1007		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed 4-4'-ddt			6.71%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.55	23.2	0.3860		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937		Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-4213-3943		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed 4-4'-ddt			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.86	23.2	0.2189	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.937	0.741	0.5204	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-2705-8421		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed 4-4'-ddt				62.46%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	2.12	2.35	0.286	3	CDF	0.0621	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.147233		0.147233		1		5.8	0.0468	Significant Effect		
Error	0.177599		0.0253713		7						
Total	0.324832				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				153	24.3	2.8E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.943	0.701	0.6143	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		4	0.715	0.33	1.1	0.697	0.478	0.987	0.121	33.88%	-56.25%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.848	0.478	0.547	Outlier	0.987					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-2645-4290		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed 4-4'-ddt			38.51%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	4.62	2.35	0.176	3	CDF	0.0095	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.266266		0.266266		1		27.5	0.0012	Significant Effect		
Error	0.0678899		0.0096986		7						
Total	0.334156				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				57.7	24.3	0.0019	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.841	0.701	0.0595	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		4	0.804	0.567	1.04	0.834	0.597	0.95	0.0744	18.50%	-75.64%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.95	0.82	0.597	Outlier	0.848					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-2831-5530		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed 4-4'-ddt			69.12%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	3	2.13	0.316	4	CDF	0.0200	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1903		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.495508		0.495508		1	9	0.0171	Significant Effect			
Error	0.440274		0.0550343		8						
Total	0.935782				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			286	23.2	7.3E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.89	0.741	0.1709		Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.903	0.492	1.31	0.908	0.45	1.32	0.148	36.68%	-97.29%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		1.09	0.45	1.32	0.746	0.908					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-4324-9486		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed aldrin				5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.24	23.2	0.8414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369		Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-1361-7608		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed aldrin			5.37%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution				
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5413-7539		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 passed aldrin			5.98%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect		
Error		0.004324		0.0005405		8					
Total		0.0043916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-5034-3586		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed aldrin			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.55	23.2	0.3860		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937		Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-3377-9525		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed aldrin				3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0026244		0.0026244		1	10.9	0.0109	Significant Effect		
Error		0.00193		0.0002413		8					
Total		0.0045544				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-5928-6541		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 passed aldrin			4.24%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.65	2.29	0.7965	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect		
Error		0.0021744		0.0002718		8					
Total		0.0022				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.39	23.2	0.4192	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.979	0.741	0.9611	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-9351-7144		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed aldrin				5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.34	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect			
Error	0.0036392		0.0004549		8						
Total	0.0039756				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.37	23.2	0.7659		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2338		Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-4098-0609		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed aldrin			4.80%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect		
Error		0.002788		0.0003485		8					
Total		0.0029816				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.22	23.2	0.8507	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6301	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-3971-7329		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed alpha chlordane (trans)				5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect		
Error		0.0034304		0.0004288		8					
Total		0.0035985				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-8932-2242			Endpoint: alpha chlordane				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)								
Data Transform		Alt Hyp	Comparison Result				PMSD				
Untransformed		C < T	29517-002 passed alpha chlordane (trans)				5.37%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.56	2.29	0.9973	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.27	23.2	0.8196	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.928	0.741	0.4327	Normal Distribution					
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-5435-2336			Endpoint: alpha chlordane				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)								
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed alpha chlordane (trans)				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.82	23.2	0.5760		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482		Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-0326-6903		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed alpha chlordane (trans)			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-6962-5083			Endpoint: alpha chlordane				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed alpha chlordane (trans)			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0026244		0.0026244		1	10.9	0.0109	Significant Effect		
Error		0.00193		0.0002413		8					
Total		0.0045544				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-8917-5468		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed alpha chlordane (trans)				39.32%	
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.79	2.13	0.18	4	CDF	0.0736	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.5036	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0573049		0.0573049		1	3.22	0.1106	Non-Significant Effect			
Error	0.142469		0.0178086		8						
Total	0.199774				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			91.9	23.2	6.9E-04	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.901	0.741	0.2220	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.609	0.376	0.842	0.492	0.458	0.835	0.0839	30.82%	-33.09%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.492	0.458	0.835	0.468	0.792					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9714-8997		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source			Station Location		Lat/Long			
29517-009	Reference sediment		New Haven Harbor FNP -2017			CLDS Reference Site					
59517-007	Marine Sediment		New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)					
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed alpha chlordane (trans)				12.83%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	1.03	1.89	0.059	7	CDF	0.1687	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.0022614		0.0022614		1		1.06	0.3374	Non-Significant Effect		
Error	0.0149302		0.0021329		7						
Total	0.0171916				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				11.7	24.3	0.0382	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.889	0.701	0.1972	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		4	0.49	0.383	0.596	0.47	0.432	0.586	0.0334	13.65%	-6.97%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.586	0.432	Outlier	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-2232-9549		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed alpha chlordane (trans)				9.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.748	1.86	0.042	8	CDF	0.2380	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.99	2.29	0.2456	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0007225		0.0007225		1	0.559	0.4760	Non-Significant Effect		
Error		0.0103364		0.0012921		8					
Total		0.0110589				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			5.74	23.2	0.1190	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.966	0.741	0.8463	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.475	0.416	0.533	0.459	0.422	0.542	0.021	9.88%	-3.72%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.5	0.45	0.542	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-6545-6674			Endpoint: cis-Nonachlor				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed cis-nonachlor				5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-4929-3122		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed cis-nonachlor				5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.27	23.2	0.8196		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327		Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-0877-3797		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed cis-nonachlor			5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution				
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-2866-7517		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed cis-nonachlor				6.71%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution				
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-4181-5341		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed cis-nonachlor				3.99%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.86	23.2	0.2189	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.937	0.741	0.5204	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-5367-3112		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed cis-nonachlor			4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7965		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect			
Error	0.0021744		0.0002718		8						
Total	0.0022				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.39	23.2	0.4192		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.979	0.741	0.9611		Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-7937-9170		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed cis-nonachlor			5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.34	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect			
Error	0.0036392		0.0004549		8						
Total	0.0039756				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.37	23.2	0.7659	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2338	Normal Distribution				
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5147-5332		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed cis-nonachlor				4.80%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect		
Error		0.002788		0.0003485		8					
Total		0.0029816				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.22	23.2	0.8507	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6301	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-2325-2637		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed dieldrin			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.24	23.2	0.8414		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369		Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-9725-0639		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed dieldrin			65.39%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	24	n/a	0	8	Exact	0.2738	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.67	2.29	5.4E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0646416		0.0646416		1	0.999	0.3469	Non-Significant Effect			
Error	0.517894		0.0647368		8						
Total	0.582536				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				337	23.2	5.2E-05	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.674	0.741	4.3E-04	Non-Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.618	0.172	1.06	0.471	0.436	1.26	0.161	58.10%	-35.14%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		1.26	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-8236-4663		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed dieldrin				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect		
Error		0.004324		0.0005405		8					
Total		0.0043916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-5583-1727		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed dieldrin			6.71%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-0527-9366		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed dieldrin				3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0026244		0.0026244	1	10.9	0.0109	Significant Effect				
Error	0.00193		0.0002413	8							
Total	0.0045544			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution				
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-5385-1974		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 failed dieldrin			25.31%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006*	4.72	2.13	0.116	4	CDF	0.0046	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.2	2.29	0.0886		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.164352		0.164352		1	22.3	0.0015	Significant Effect			
Error	0.0590472		0.0073809		8						
Total	0.2234				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			37.5	23.2	0.0040		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.921	0.741	0.3637		Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.714	0.565	0.863	0.743	0.536	0.853	0.0536	16.79%	-56.03%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.743	0.666	0.853	0.772	0.536					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-4684-7912		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 failed dieldrin			34.86%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.29	2.13	0.16	4	CDF	0.0419	Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.12	2.29	0.1375	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0734449		0.0734449		1	5.25	0.0512	Non-Significant Effect			
Error	0.112009		0.0140012		8						
Total	0.185454				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				72.1	23.2	0.0011	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.938	0.741	0.5354	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.629	0.423	0.835	0.568	0.438	0.865	0.0743	26.42%	-37.46%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.865	0.568	0.438	0.722	0.552					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-0526-8609		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed dieldrin			16.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.15	1.86	0.074	8	CDF	0.1412	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.49	2.29	0.0091		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0052441		0.0052441		1	1.33	0.2824	Non-Significant Effect			
Error	0.0315904		0.0039488		8						
Total	0.0368345				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			19.6	23.2	0.0137		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.819	0.741	0.0246		Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.503	0.396	0.611	0.487	0.435	0.651	0.0388	17.22%	-10.01%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.446	0.487	0.498	0.435	0.651					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-4485-2684		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed dieldrin				6.93%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	0.532	1.89	0.032	7	CDF	0.3057	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF		F Stat	P-Value	Decision(α:5%)		
Between	0.0001760		0.0001760		1		0.283	0.6114	Non-Significant Effect		
Error	0.0043582		0.0006226		7						
Total	0.0045342				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.46	24.3	0.4055	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.93	0.701	0.4777	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		4	0.466	0.418	0.515	0.466	0.435	0.498	0.0153	6.58%	-1.94%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.446	0.487	0.498	0.435	Outlier					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-3929-0494		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed endosulfan i				5.32%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-8465-4467		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed endosulfan i				5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution				
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-5928-3008		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed endosulfan i				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		6.76E-05	6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error		0.004324	0.0005405		8						
Total		0.0043916		9							
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9954-1329		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed endosulfan i			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.55	23.2	0.3860		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937		Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-1335-4980		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed endosulfan i			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution				
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-0752-0595		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed endosulfan i				4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7965	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect			
Error	0.0021744		0.0002718		8						
Total	0.0022				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.39	23.2	0.4192	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.979	0.741	0.9611	Normal Distribution				
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-8059-2222		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed endosulfan i				5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.34	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect		
Error		0.0036392		0.0004549		8					
Total		0.0039756				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.37	23.2	0.7659	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.903	0.741	0.2338	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-2782-2286		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed endosulfan i				4.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.52	2.29	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect			
Error	0.002788		0.0003485		8						
Total	0.0029816				9						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.22	23.2	0.8507		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.947	0.741	0.6301		Normal Distribution				
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-8889-1693		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)								
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed endosulfan ii				5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-9033-9345		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed endosulfan ii				5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.27	23.2	0.8196		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-8280-2217		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed endosulfan ii				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.82	23.2	0.5760		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-6511-0683		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed endosulfan ii			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.55	23.2	0.3860		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5339-6442		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed endosulfan ii				3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.75	2.29	0.5884		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.86	23.2	0.2189		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5204		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-3587-0681		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed endosulfan ii				113.91%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	1.58	2.13	0.521	4	CDF	0.0951	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.02	2.29	0.2130	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.371333		0.371333		1	2.48	0.1536	Non-Significant Effect		
Error		1.19568		0.14946		8					
Total		1.56701				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			779	23.2	9.9E-06	Unequal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.87	0.741	0.1010	Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.843	0.165	1.52	0.468	0.434	1.58	0.244	64.81%	-84.22%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		1.58	0.453	0.434	0.468	1.28					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-1583-0356			Endpoint: endosulfan II				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 failed endosulfan ii			166.19%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007*	2.3	2.13	0.761	4	CDF	0.0413	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.69	2.29	0.6973		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.69003		1.69003		1	5.31	0.0501	Non-Significant Effect			
Error	2.54521		0.318151		8						
Total	4.23524				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1660	23.2	2.2E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.893	0.741	0.1836		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	1.28	0.29	2.27	1.48	0.432	2.18	0.357	62.31%	-179.68%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		1.48	0.432	1.84	2.18	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-6825-3142		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed endosulfan ii			77.48%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	28	n/a	0	8	Exact	0.5794	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.68	2.29	4.9E-04	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0820836		0.0820836		1	0.903	0.3698	Non-Significant Effect			
Error	0.727068		0.0908835		8						
Total	0.809152				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				473	23.2	2.7E-05	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.666	0.741	3.4E-04	Non-Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.639	0.11	1.17	0.459	0.422	1.4	0.19	66.67%	-39.60%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	1.4	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-0032-7021		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed endrin				138.14%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	27	n/a	0	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.04	2.29	0.1925		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0996004		0.0996004		1	0.0154	0.9042	Non-Significant Effect			
Error	51.6201		6.45251		8						
Total	51.7197				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.39	23.2	0.7597		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.688	0.741	6.4E-04		Non-Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-001		5	1.96	-1.44	5.36	0.771	0.677	6.86	1.22	139.47%	9.23%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-001		0.775	0.677	0.732	6.86	0.771					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-1859-9351		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed endrin			93.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-1.01	1.86	2.02	8	CDF	0.8287	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.46	2.29	0.0123	Outlier Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.98881		2.98881		1	1.02	0.3426	Non-Significant Effect		
Error		23.4936		2.93669		8					
Total		26.4824				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			11.7	23.2	0.0355	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.814	0.741	0.0217	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-002		5	1.07	0.224	1.91	0.688	0.438	1.9	0.305	63.70%	50.56%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-002		1.71	0.61	0.438	1.9	0.688					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-7612-2312		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed endrin				359.92%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	26	n/a	0	8	Exact	0.4206	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.59	2.29	0.0025		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	25.0969		25.0969		1	0.573	0.4708	Non-Significant Effect			
Error	350.41		43.8012		8						
Total	375.506				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			15.2	23.2	0.0219		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.725	0.741	0.0018		Non-Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-003		5	5.33	-5.93	16.6	1.78	0.454	21.5	4.05	170.06%	-146.51%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-003		0.761	0.454	2.16	1.78	21.5					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-0437-1921		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed endrin				142.85%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	0.394	1.86	3.09	8	CDF	0.3521	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.61	2.29	0.8927	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.06864		1.06864		1	0.155	0.7042	Non-Significant Effect		
Error		55.2007		6.90009		8					
Total		56.2694				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.55	23.2	0.6810	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.815	0.741	0.0223	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-004		5	2.82	-0.78	6.41	0.993	0.471	6.34	1.3	102.85%	-30.23%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-004		0.678	5.6	0.471	6.34	0.993					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-1930-9582		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed endrin			89.70%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	30	n/a	0	8	Exact	0.7262	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.56	2.29	0.0041	Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.28674		5.28674		1	1.94	0.2008	Non-Significant Effect			
Error	21.7649		2.72061		8						
Total	27.0516				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				171	23.2	2.0E-04	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.74	0.741	0.0027	Non-Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-005		5	0.708	0.487	0.929	0.67	0.536	0.957	0.0796	25.13%	67.24%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-005		0.536	0.957	0.818	0.67	0.561					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 12-9066-5759		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-005 passed endrin			58.01%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-1.29	1.89	0.678	7	CDF	0.8803	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.469916		0.469916		1	1.65	0.2395	Non-Significant Effect			
Error	1.99021		0.284316		7						
Total	2.46013				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				19.6	24.3	0.0149	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.956	0.701	0.7597	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	1.17	-0.0859	2.42	1.11	0.48	1.97	0.394	67.46%	0.00%
29517-005		5	0.708	0.487	0.929	0.67	0.536	0.957	0.0796	25.13%	39.36%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	Outlier					
29517-005		0.536	0.957	0.818	0.67	0.561					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-0373-0856		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 passed endrin			66.89%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.51	1.89	0.781	7	CDF	0.6872	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0984204		0.0984204		1	0.26	0.6256	Non-Significant Effect			
Error	2.64663		0.37809		7						
Total	2.74505				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.17	24.3	0.2939	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.896	0.701	0.2307	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	4	1.17	-0.0859	2.42	1.11	0.48	1.97	0.394	67.46%	0.00%
29517-006		5	0.958	0.408	1.51	0.847	0.544	1.71	0.198	46.20%	18.01%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	Outlier					
29517-006		0.847	0.907	1.71	0.781	0.544					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-3330-1909		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed endrin			118.99%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.504	1.89	2.57	7	CDF	0.6852	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.04227		1.04227		1	0.254	0.6296	Non-Significant Effect			
Error	28.6975		4.09964		7						
Total	29.7397				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.3	46.2	0.5200	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.807	0.701	0.0243	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
59517-007		4	1.48	-0.963	3.92	0.824	0.522	3.74	0.767	103.81%	31.67%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
59517-007		0.529	0.522	1.12	Outlier	3.74					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-7511-5425		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed endrin			194.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	1.58	1.86	4.2	8	CDF	0.0768	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.98	2.29	0.2506	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		31.6733		31.6733		1	2.48	0.1536	Non-Significant Effect		
Error		101.97		12.7463		8					
Total		133.644				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.71	23.2	0.2320	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.936	0.741	0.5058	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	2.16	-0.725	5.05	1.72	0.48	6.14	1.04	107.55%	0.00%
29517-008		5	5.72	0.158	11.3	4.62	1.26	12.4	2	78.32%	-164.59%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	1.97	0.48	1.72	0.503	6.14					
29517-008		7.81	2.52	1.26	4.62	12.4					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-8012-3452		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed gamma-bhc (lindane)			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect		
Error		0.0034304		0.0004288		8					
Total		0.0035985				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 21-3366-7682		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed gamma-bhc (lindane)			5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		1.440E-05	1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error		0.003488	0.000436		8						
Total		0.0035024			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-0616-2622		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed gamma-bhc (lindane)			5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.82	23.2	0.5760	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.977	0.741	0.9482	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-4988-3304		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed gamma-bhc (lindane)			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-8657-2732		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed gamma-bhc (lindane)			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.86	23.2	0.2189	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.937	0.741	0.5204	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9910-2120			Endpoint: gamma-BHC (Lindane)				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed gamma-bhc (lindane)			4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.65	2.29	0.7965	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect			
Error	0.0021744		0.0002718		8						
Total	0.0022				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.39	23.2	0.4192	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.979	0.741	0.9611	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-5805-6844		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed gamma-bhc (lindane)			5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.34	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect			
Error	0.0036392		0.0004549		8						
Total	0.0039756				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.37	23.2	0.7659	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.903	0.741	0.2338	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-9752-2524		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed gamma-bhc (lindane)			4.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect			
Error	0.002788		0.0003485		8						
Total	0.0029816				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.22	23.2	0.8507	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6301	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-1787-6747			Endpoint: gamma-chlordane				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site								
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)								
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-001 passed gamma-chlordane (cis)			5.32%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001681		0.0001681	1	0.392	0.5487	Non-Significant Effect				
Error	0.0034304		0.0004288	8							
Total	0.0035985			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-6447-8359		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed gamma-chlordane (cis)				5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect		
Error		0.003488		0.000436		8					
Total		0.0035024				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution			
gamma-chlordane		Summary									
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
gamma-chlordane		Detail									
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-3689-0626		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed gamma-chlordane (cis)			5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution				
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7228-8508		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed gamma-chlordane (cis)			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-7445-6868		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed gamma-chlordane (cis)			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0026244		0.0026244		1	10.9	0.0109	Significant Effect		
Error		0.00193		0.0002413		8					
Total		0.0045544				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-4012-7885		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed gamma-chlordane (cis)			4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.65	2.29	0.7965	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect		
Error		0.0021744		0.0002718		8					
Total		0.0022				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.39	23.2	0.4192	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.979	0.741	0.9611	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-1513-1297		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed gamma-chlordane (cis)				5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.34	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect		
Error		0.0036392		0.0004549		8					
Total		0.0039756				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.37	23.2	0.7659	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.903	0.741	0.2338	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-4264-0005		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed gamma-chlordane (cis)				4.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect		
Error		0.002788		0.0003485		8					
Total		0.0029816				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.22	23.2	0.8507	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6301	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-8562-7391		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed heptachlor epoxide				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.888	0.846	0.952	0.0195	4.85%	1.81%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 13-6352-3668		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed heptachlor epoxide				5.35%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	5.760E-05		5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error	0.0138584		0.0017323		8						
Total	0.013916				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.35	23.2	0.7791	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.931	0.741	0.4532	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966	0.888	0.871	0.973	0.0199	4.90%	0.52%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-9599-4395		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed heptachlor epoxide			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992	0.938	0.847	0.992	0.0238	5.74%	-1.11%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 04-0226-7741		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed heptachlor epoxide				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5287		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error	0.021562		0.0026953		8						
Total	0.0222509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.65	23.2	0.3674		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.913	0.741	0.3050		Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976	0.874	0.846	0.986	0.028	6.96%	1.81%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-0929-4932		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed heptachlor epoxide				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0106929		0.0106929		1	11.5	0.0095	Significant Effect			
Error	0.0074352		0.0009294		8						
Total	0.0181281				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.85	23.2	0.2203	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4805	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874	0.843	0.836	0.883	0.00876	2.30%	7.14%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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 Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 17-4733-9448		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed heptachlor epoxide			4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect			
Error	0.0084892		0.0010612		8						
Total	0.0085916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution				
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941	0.914	0.868	0.936	0.0114	2.80%	0.70%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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 Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-8720-6764		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed heptachlor epoxide				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect		
Error		0.0144024		0.0018003		8					
Total		0.0157249				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95	0.877	0.84	0.947	0.0206	5.17%	2.51%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-4786-7119		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed heptachlor epoxide				4.76%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.16	23.2	0.8900	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6346	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942	0.901	0.843	0.938	0.016	3.98%	1.97%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-3008-0030		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed heptachlor			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-2561-8713		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed heptachlor			5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.440E-05		1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error	0.003488		0.000436		8						
Total	0.0035024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.27	23.2	0.8196		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327		Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-9404-1116		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed heptachlor				5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect		
Error		0.004324		0.0005405		8					
Total		0.0043916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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 Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-3848-5308		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed heptachlor			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect			
Error	0.0054484		0.0006811		8						
Total	0.0056165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-5195-4009		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed heptachlor				3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0026244		0.0026244		1	10.9	0.0109	Significant Effect		
Error		0.00193		0.0002413		8					
Total		0.0045544				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-7168-6069		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed heptachlor				4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.019	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7965	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.560E-05		2.560E-05		1	0.0942	0.7668	Non-Significant Effect			
Error	0.0021744		0.0002718		8						
Total	0.0022				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.39	23.2	0.4192	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.979	0.741	0.9611	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.454	0.439	0.47	0.457	0.434	0.468	0.00566	2.79%	0.70%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.46					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-7692-8142		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed heptachlor				5.48%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.025	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.34	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.74	0.4148	Non-Significant Effect			
Error	0.0036392		0.0004549		8						
Total	0.0039756				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.37	23.2	0.7659		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2338		Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.446	0.418	0.474	0.438	0.42	0.473	0.0103	5.14%	2.53%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.42	0.432	0.438	0.473	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-1589-3366		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed heptachlor			4.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.022	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.52	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001936		0.0001936		1	0.556	0.4774	Non-Significant Effect			
Error	0.002788		0.0003485		8						
Total	0.0029816				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.22	23.2	0.8507	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6301	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	0.449	0.427	0.471	0.45	0.422	0.469	0.00792	3.95%	1.92%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		0.444	0.45	0.469	0.422	0.459					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-9658-9651		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed hexachlorobenzene				5.28%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect		
Error		0.01349		0.0016863		8					
Total		0.0141789				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.29	23.2	0.8133	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.92	0.741	0.3587	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.888	0.846	0.952	0.0195	4.85%	1.81%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-2667-0944		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed hexachlorobenzene				5.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		5.760E-05	5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error		0.0138584	0.0017323		8						
Total		0.013916			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966	0.888	0.871	0.973	0.0199	4.90%	0.52%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-9712-7554		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed hexachlorobenzene			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.91	23.2	0.5455		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463		Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992	0.938	0.847	0.992	0.0238	5.74%	-1.11%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 07-8793-9468			Endpoint: hexachlorobenzene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed hexachlorobenzene				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0006889	0.0006889		1	0.256	0.6268	Non-Significant Effect			
Error		0.021562	0.0026953		8						
Total		0.0222509			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976	0.874	0.846	0.986	0.028	6.96%	1.81%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-1340-7903		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed hexachlorobenzene				3.92%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0106929		0.0106929		1	11.5	0.0095	Significant Effect		
Error		0.0074352		0.0009294		8					
Total		0.0181281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874	0.843	0.836	0.883	0.00876	2.30%	7.14%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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 Test Code: 29524Mn-Pest | 03-7604-1995

Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-2844-8371		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed hexachlorobenzene				4.19%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941	0.914	0.868	0.936	0.0114	2.80%	0.70%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 00-1833-3932		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
59517-007	Marine Sediment	New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed hexachlorobenzene				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.44	23.2	0.7322	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722	Normal Distribution				
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95	0.877	0.84	0.947	0.0206	5.17%	2.51%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-1732-5971			Endpoint: hexachlorobenzene				CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed hexachlorobenzene				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect			
Error	0.0109944		0.0013743		8						
Total	0.0118044				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution				
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942	0.901	0.843	0.938	0.016	3.98%	1.97%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-4857-1093		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed methoxychlor			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.244	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.01681		0.01681		1	0.392	0.5487	Non-Significant Effect			
Error	0.34304		0.04288		8						
Total	0.35985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-001		5	4.49	4.22	4.76	4.44	4.23	4.76	0.0974	4.85%	1.79%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-001		4.44	4.23	4.37	4.76	4.67					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-9472-5130		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed methoxychlor				5.37%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.246	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00144		0.00144		1	0.033	0.8603	Non-Significant Effect			
Error	0.3488		0.0436		8						
Total	0.35024				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution				
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-002		5	4.55	4.28	4.83	4.44	4.36	4.86	0.0989	4.86%	0.52%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-002		4.44	4.71	4.36	4.86	4.39					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-1620-0471		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed methoxychlor			5.98%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.273	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00676		0.00676		1	0.125	0.7327	Non-Significant Effect			
Error	0.4324		0.05405		8						
Total	0.43916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.82	23.2	0.5760	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482	Normal Distribution				
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-003		5	4.63	4.3	4.96	4.69	4.24	4.96	0.118	5.71%	-1.14%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-003		4.71	4.54	4.24	4.96	4.69					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 11-3368-1608		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed methoxychlor			6.71%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.307	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5452		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.01681		0.01681		1	0.247	0.6327	Non-Significant Effect			
Error	0.54484		0.068105		8						
Total	0.56165				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.55	23.2	0.3860		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.741	0.2937		Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-004		5	4.49	4.11	4.88	4.37	4.23	4.93	0.14	6.96%	1.79%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-004		4.23	4.37	4.71	4.23	4.93					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-1834-0874		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed methoxychlor			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.183	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.26244		0.26244		1	10.9	0.0109	Significant Effect		
Error		0.193		0.024125		8					
Total		0.45544				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.86	23.2	0.2189	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5204	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-005		5	4.25	4.13	4.38	4.22	4.18	4.42	0.0445	2.34%	7.08%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-005		4.26	4.22	4.18	4.42	4.18					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-9904-1731		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed methoxychlor				4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.307	1.86	0.194	8	CDF	0.6166	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7965	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.00256		0.00256		1	0.0942	0.7668	Non-Significant Effect			
Error	0.21744		0.02718		8						
Total	0.22				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.39	23.2	0.4192	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.979	0.741	0.9611	Normal Distribution				
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-006		5	4.54	4.39	4.7	4.57	4.34	4.68	0.0566	2.79%	0.70%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-006		4.57	4.53	4.34	4.68	4.6					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-8335-7759		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed methoxychlor				5.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.86	1.86	0.251	8	CDF	0.7926	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.34	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.03364		0.03364		1	0.74	0.4148	Non-Significant Effect			
Error	0.36392		0.04549		8						
Total	0.39756				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.37	23.2	0.7659	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2338	Normal Distribution				
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
59517-007		5	4.46	4.18	4.74	4.38	4.2	4.73	0.103	5.14%	2.53%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
59517-007		4.2	4.32	4.38	4.73	4.67					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-4903-9448		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-008	Marine Sediment	New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed methoxychlor			4.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.745	1.86	0.22	8	CDF	0.7613	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.01936		0.01936		1	0.556	0.4774	Non-Significant Effect			
Error	0.2788		0.03485		8						
Total	0.29816				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.22	23.2	0.8507	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6301	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.33	4.82	4.53	4.32	4.83	0.0876	4.28%	0.00%
29517-008		5	4.49	4.27	4.71	4.5	4.22	4.69	0.0792	3.95%	1.92%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.83	4.5	4.53	4.32	4.7					
29517-008		4.44	4.5	4.69	4.22	4.59					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-9371-6668		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed oxychlordane				5.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.639	1.86	0.048	8	CDF	0.7297	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.37	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0006889		0.0006889		1	0.409	0.5406	Non-Significant Effect			
Error	0.01349		0.0016863		8						
Total	0.0141789				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.29	23.2	0.8133	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.92	0.741	0.3587	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-001		5	0.899	0.845	0.953	0.888	0.846	0.952	0.0195	4.85%	1.81%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-001		0.888	0.846	0.874	0.952	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-4678-9743		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed oxychlordane			5.35%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.049	8	CDF	0.5701	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.59	2.29	0.9317	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		5.760E-05	5.760E-05		1	0.0333	0.8598	Non-Significant Effect			
Error		0.0138584	0.0017323		8						
Total		0.013916			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.35	23.2	0.7791	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.931	0.741	0.4532	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-002		5	0.911	0.855	0.966	0.888	0.871	0.973	0.0199	4.90%	0.52%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-002		0.888	0.942	0.871	0.973	0.879					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-5511-0815		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed oxychlordane			5.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.348	1.86	0.055	8	CDF	0.3684	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.8	2.29	0.4996	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002601		0.0002601		1	0.121	0.7369	Non-Significant Effect			
Error	0.0171864		0.0021483		8						
Total	0.0174465				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.91	23.2	0.5455	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9463	Normal Distribution				
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-003		5	0.926	0.86	0.992	0.938	0.847	0.992	0.0238	5.74%	-1.11%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-003		0.942	0.909	0.847	0.992	0.938					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 14-9628-8512		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed oxychlordane				6.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.506	1.86	0.061	8	CDF	0.6866	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5287	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0006889		0.0006889		1	0.256	0.6268	Non-Significant Effect		
Error		0.021562		0.0026953		8					
Total		0.0222509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.65	23.2	0.3674	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.913	0.741	0.3050	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-004		5	0.899	0.821	0.976	0.874	0.846	0.986	0.028	6.96%	1.81%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-004		0.846	0.874	0.942	0.846	0.986					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 02-5041-9340		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed oxychlordane			3.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.39	1.86	0.036	8	CDF	0.9953	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.75	2.29	0.5786	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0106929		0.0106929		1	11.5	0.0095	Significant Effect		
Error		0.0074352		0.0009294		8					
Total		0.0181281				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.85	23.2	0.2203	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4805	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-005		5	0.85	0.826	0.874	0.843	0.836	0.883	0.00876	2.30%	7.14%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-005		0.852	0.843	0.836	0.883	0.836					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-2913-9342		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed oxychlordane				4.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.311	1.86	0.038	8	CDF	0.6180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8100	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001024		0.0001024		1	0.0965	0.7640	Non-Significant Effect		
Error		0.0084892		0.0010612		8					
Total		0.0085916				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.28	23.2	0.4443	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.977	0.741	0.9440	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-006		5	0.909	0.877	0.941	0.914	0.868	0.936	0.0114	2.80%	0.70%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-006		0.914	0.906	0.868	0.936	0.921					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-6674-8567		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed oxychlordane				5.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.857	1.86	0.05	8	CDF	0.7918	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0013225		0.0013225		1	0.735	0.4163	Non-Significant Effect			
Error	0.0144024		0.0018003		8						
Total	0.0157249				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.44	23.2	0.7322		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.741	0.2722		Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
59517-007		5	0.892	0.835	0.95	0.877	0.84	0.947	0.0206	5.17%	2.51%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
59517-007		0.84	0.864	0.877	0.947	0.934					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-7984-2198		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed oxychlordane				4.76%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.768	1.86	0.044	8	CDF	0.7676	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00081		0.00081		1	0.589	0.4647	Non-Significant Effect		
Error		0.0109944		0.0013743		8					
Total		0.0118044				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.16	23.2	0.8900	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.947	0.741	0.6346	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.915	0.868	0.963	0.906	0.865	0.965	0.0172	4.20%	0.00%
29517-008		5	0.897	0.853	0.942	0.901	0.843	0.938	0.016	3.98%	1.97%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.965	0.901	0.906	0.865	0.94					
29517-008		0.888	0.901	0.938	0.843	0.917					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-2348-3726		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed toxaphene				5.31%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.641	1.86	1.22	8	CDF	0.7303	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.39	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.441002		0.441002		1	0.411	0.5394	Non-Significant Effect			
Error	8.584		1.073		8						
Total	9.025				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.3	23.2	0.8054		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.924	0.741	0.3930		Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-001		5	22.5	21.2	23.9	22.3	21.2	23.9	0.493	4.89%	1.83%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-001		22.3	21.2	21.9	23.9	23.4					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 10-1694-3562		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed toxaphene			5.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.183	1.86	1.22	8	CDF	0.5702	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.59	2.29	0.9231	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0360005		0.0360005		1	0.0334	0.8595	Non-Significant Effect			
Error	8.624		1.078		8						
Total	8.66				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.31	23.2	0.7995	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.927	0.741	0.4156	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-002		5	22.8	21.5	24.2	22.3	21.9	24.4	0.495	4.84%	0.52%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-002		22.3	23.6	21.9	24.4	22					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 05-1936-3201		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed toxaphene				5.91%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.356	1.86	1.36	8	CDF	0.3654	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5562	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.168999		0.168999		1	0.127	0.7307	Non-Significant Effect			
Error	10.64		1.33		8						
Total	10.809				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.85	23.2	0.5656	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.979	0.741	0.9598	Normal Distribution				
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-003		5	23.2	21.6	24.9	23.5	21.3	24.9	0.588	5.66%	-1.13%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-003		23.6	22.8	21.3	24.9	23.5					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 03-5721-9961		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed toxaphene			6.77%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.503	1.86	1.55	8	CDF	0.6856	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.81	2.29	0.4739	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.441001		0.441001		1	0.253	0.6288	Non-Significant Effect		
Error		13.964		1.7455		8					
Total		14.405				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.74	23.2	0.3522	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.914	0.741	0.3098	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-004		5	22.5	20.6	24.5	21.9	21.2	24.8	0.715	7.10%	1.83%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-004		21.2	21.9	23.6	21.2	24.8					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 06-6851-1017		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed toxaphene			3.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.29	1.86	0.904	8	CDF	0.9945	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.74	2.29	0.6053	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.4		6.4		1	10.8	0.0110	Significant Effect			
Error	4.724		0.5905		8						
Total	11.124				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			3.76	23.2	0.2275	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.93	0.741	0.4523	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-005		5	21.4	20.7	22	21.2	21	22.2	0.223	2.33%	6.97%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-005		21.4	21.2	21	22.2	21					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 20-4811-3444		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed toxaphene			4.18%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	-0.31	1.86	0.96	8	CDF	0.6177	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.64	2.29	0.8193	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0640005		0.0640005		1	0.096	0.7646	Non-Significant Effect		
Error		5.332		0.6665		8					
Total		5.396				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.33	23.2	0.4322	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.979	0.741	0.9592	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-006		5	22.8	22	23.6	22.9	21.8	23.5	0.283	2.77%	0.70%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-006		22.9	22.7	21.8	23.5	23.1					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-4480-0547		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed toxaphene			5.44%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	-0.833	1.86	1.25	8	CDF	0.7856	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.4	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.784002		0.784002		1	0.694	0.4288	Non-Significant Effect		
Error		9.03199		1.129		8					
Total		9.816				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.42	23.2	0.7422	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.91	0.741	0.2839	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
59517-007		5	22.4	21	23.8	22	21.1	23.8	0.515	5.14%	2.44%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
59517-007		21.1	21.7	22	23.8	23.4					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 16-2951-4624		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed toxaphene			4.69%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.759	1.86	1.08	8	CDF	0.7652	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.53	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.484001		0.484001		1	0.576	0.4696	Non-Significant Effect			
Error	6.72		0.84		8						
Total	7.204				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.25	23.2	0.8346	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.947	0.741	0.6347	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.8	24.2	22.7	21.7	24.2	0.432	4.21%	0.00%
29517-008		5	22.5	21.4	23.6	22.6	21.2	23.5	0.387	3.84%	1.92%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	24.2	22.6	22.7	21.7	23.6					
29517-008		22.3	22.6	23.5	21.2	23					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-9575-4488		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	7d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed trans-nonachlor				5.32%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	-0.626	1.86	0.024	8	CDF	0.7257	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.36	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001681		0.0001681		1	0.392	0.5487	Non-Significant Effect			
Error	0.0034304		0.0004288		8						
Total	0.0035985				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	23.2	0.8414	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.918	0.741	0.3369	Normal Distribution				
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-001		5	0.449	0.422	0.476	0.444	0.423	0.476	0.00974	4.85%	1.79%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-001		0.444	0.423	0.437	0.476	0.467					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 09-7593-9887		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	7d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed trans-nonachlor				5.37%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.182	1.86	0.025	8	CDF	0.5698	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.56	2.29	0.9973	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		1.440E-05	1.440E-05		1	0.033	0.8603	Non-Significant Effect			
Error		0.003488	0.000436		8						
Total		0.0035024			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.27	23.2	0.8196	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.928	0.741	0.4327	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-002		5	0.455	0.428	0.483	0.444	0.436	0.486	0.00989	4.86%	0.52%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-002		0.444	0.471	0.436	0.486	0.439					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 19-0987-4341		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	7d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed trans-nonachlor				5.98%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.354	1.86	0.027	8	CDF	0.3664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5486		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.76E-05		6.76E-05		1	0.125	0.7327	Non-Significant Effect			
Error	0.004324		0.0005405		8						
Total	0.0043916				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.82	23.2	0.5760		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.977	0.741	0.9482		Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-003		5	0.463	0.43	0.496	0.469	0.424	0.496	0.0118	5.71%	-1.14%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-003		0.471	0.454	0.424	0.496	0.469					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-6795-7760		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	7d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed trans-nonachlor				6.71%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.497	1.86	0.031	8	CDF	0.6837	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5452	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0001681		0.0001681		1	0.247	0.6327	Non-Significant Effect		
Error		0.0054484		0.0006811		8					
Total		0.0056165				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.55	23.2	0.3860	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.912	0.741	0.2937	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-004		5	0.449	0.411	0.488	0.437	0.423	0.493	0.014	6.96%	1.79%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-004		0.423	0.437	0.471	0.423	0.493					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 18-0820-0616		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:58		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	7d 8h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-005	Marine Sediment	New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)							
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed trans-nonachlor			3.99%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	-3.3	1.86	0.018	8	CDF	0.9946	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.75	2.29	0.5884	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0026244		0.0026244		1	10.9	0.0109	Significant Effect			
Error	0.00193		0.0002413		8						
Total	0.0045544				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				3.86	23.2	0.2189	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.937	0.741	0.5204	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-005		5	0.425	0.413	0.438	0.422	0.418	0.442	0.00445	2.34%	7.08%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-005		0.426	0.422	0.418	0.442	0.418					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 01-7212-7269		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	7d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed trans-nonachlor				33.75%	
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	25.5	n/a	1	8	Exact	0.3651	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.66	2.29	7.0E-04		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0151321		0.0151321		1	0.878	0.3763	Non-Significant Effect			
Error	0.13793		0.0172413		8						
Total	0.153063				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			89	23.2	7.4E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.7	0.741	8.7E-04		Non-Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-006		5	0.535	0.306	0.765	0.457	0.434	0.865	0.0826	34.49%	-17.00%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-006		0.457	0.453	0.434	0.468	0.865					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 15-7059-1789		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Nonparametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	7d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed trans-nonachlor			86.70%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	23.5	n/a	1	8	Exact	0.2302	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.61	2.29	0.0019		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.213452		0.213452		1	1.88	0.2080	Non-Significant Effect			
Error	0.910302		0.113788		8						
Total	1.12375				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			593	23.2	1.7E-05		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.718	0.741	0.0015		Non-Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
59517-007		5	0.75	0.158	1.34	0.625	0.432	1.58	0.213	63.57%	-63.85%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
59517-007		0.625	0.432	0.438	1.58	0.674					

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Bioaccumulation Evaluation - Pesticides - Macoma										EnviroSystems, Inc.	
Analysis ID: 08-2374-1209		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 14 Nov-17 14:59		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	11d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	7d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 failed trans-nonachlor			124.79%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008*	2.33	2.13	0.571	4	CDF	0.0400	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.65	2.29	0.7822		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.975313		0.975313		1	5.44	0.0480	Significant Effect			
Error	1.43501		0.179377		8						
Total	2.41033				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			935	23.2	6.8E-06		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.877	0.741	0.1199		Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.433	0.482	0.453	0.432	0.483	0.00876	4.28%	0.00%
29517-008		5	1.08	0.339	1.83	1.31	0.422	1.62	0.268	55.32%	-136.49%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.483	0.45	0.453	0.432	0.47					
29517-008		1.31	1.62	1.6	0.422	0.459					

28 day *Nereis virens*
Sediment Bioaccumulation Evaluation
Body Burden Data and Statistical Analysis Reports
Pesticides

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	CLDS Reference Site									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Pesticides (ng/g wet weight)										
Aldrin	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
cis-Chlordane	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
trans-Chlordane	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
cis-Nonachlor	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
trans-Nonachlor	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Oxychlordane	0.877	U	0.931	U	0.888	U	0.901	U	0.988	U
Total Chlordanes	2.629		2.795		2.664		2.701		2.964	
4,4'-DDT	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
4,4'-DDD	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
4,4'-DDE	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Total DDT	1.314		1.398		1.332		1.350		1.482	
Dieldrin	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
alpha-Endosulfan	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
beta-Endosulfan	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Endosulfans	0.876		0.932		0.888		0.900		0.988	
Endrin	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Heptachlor	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Heptachlor epoxide	0.877	U	0.931	U	0.888	U	0.901	U	0.988	U
Hexachlorobenzene	0.877	U	0.931	U	0.888	U	0.901	U	0.988	U
Lindane	0.438	U	0.466	U	0.444	U	0.450	U	0.494	U
Methoxychlor	4.380	U	4.660	U	4.440	U	4.500	U	4.940	U
Toxaphene	22.00	U	23.40	U	22.30	U	22.60	U	24.80	U

* = Qualifiers

U Analyte not detected; below Method Detection Limit; value is Method Detection Limit

J Analyte estimated; detection below Reporting Limit but above Method Detection Limit

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 1									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
cis-Chlordane	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
trans-Chlordane	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
cis-Nonachlor	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
trans-Nonachlor	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Oxychlordane	0.949	U	0.914	U	0.973	U	0.952	U	0.945	U
Total Chlordanes	2.845		2.742		2.917		2.856		2.833	
4,4'-DDT	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
4,4'-DDD	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
4,4'-DDE	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Total DDT	1.422		1.371		1.458		1.428		1.416	
Dieldrin	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
alpha-Endosulfan	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
beta-Endosulfan	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Endosulfans	0.948		0.914		0.972		0.952		0.944	
Endrin	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Heptachlor	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Heptachlor epoxide	0.949	U	0.914	U	0.973	U	0.952	U	0.945	U
Hexachlorobenzene	0.949	U	0.914	U	0.973	U	0.952	U	0.945	U
Lindane	0.474	U	0.457	U	0.486	U	0.476	U	0.472	U
Methoxychlor	4.740	U	4.570	U	4.860	U	4.760	U	4.720	U
Toxaphene	23.80	U	22.90	U	24.40	U	23.90	U	23.70	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 2									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
cis-Chlordane	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
trans-Chlordane	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
cis-Nonachlor	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
trans-Nonachlor	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Oxychlordane	0.971 U		0.919 U		0.842 U		0.976 U		0.871 U	
Total Chlordanes	2.911		2.759		2.526		2.928		2.615	
4,4'-DDT	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
4,4'-DDD	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
4,4'-DDE	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Total DDT	1.455		1.380		1.263		1.464		1.308	
Dieldrin	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
alpha-Endosulfan	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
beta-Endosulfan	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Endosulfans	0.970		0.920		0.842		0.976		0.872	
Endrin	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Heptachlor	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Heptachlor epoxide	0.971 U		0.919 U		0.842 U		0.976 U		0.871 U	
Hexachlorobenzene	0.971 U		0.919 U		0.842 U		0.976 U		0.871 U	
Lindane	0.485 U		0.460 U		0.421 U		0.488 U		0.436 U	
Methoxychlor	4.850 U		4.600 U		4.210 U		4.880 U		4.360 U	
Toxaphene	24.40 U		23.10 U		21.10 U		24.50 U		21.90 U	

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 3									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
cis-Chlordane	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
trans-Chlordane	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
cis-Nonachlor	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
trans-Nonachlor	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Oxychlordane	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
Total Chlordanes	2.688		2.622		2.976		2.874		2.917	
4,4'-DDT	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
4,4'-DDD	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
4,4'-DDE	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Total DDT	1.344		1.311		1.488		1.437		1.458	
Dieldrin	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
alpha-Endosulfan	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
beta-Endosulfan	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Endosulfans	0.896		0.874		0.992		0.958		0.972	
Endrin	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Heptachlor	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Heptachlor epoxide	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
Hexachlorobenzene	0.896	U	0.874	U	0.992	U	0.958	U	0.973	U
Lindane	0.448	U	0.437	U	0.496	U	0.479	U	0.486	U
Methoxychlor	4.480	U	4.370	U	4.960	U	4.790	U	4.860	U
Toxaphene	22.50	U	21.90	U	24.90	U	24.00	U	24.40	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 4									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
cis-Chlordane	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
trans-Chlordane	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
cis-Nonachlor	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
trans-Nonachlor	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Oxychlordane	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
Total Chlordanes	2.868		2.574		2.604		2.802		2.766	
4,4'-DDT	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
4,4'-DDD	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
4,4'-DDE	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Total DDT	1.434		1.287		1.302		1.401		1.383	
Dieldrin	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
alpha-Endosulfan	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
beta-Endosulfan	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Endosulfans	0.956		0.858		0.868		0.934		0.922	
Endrin	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Heptachlor	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Heptachlor epoxide	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
Hexachlorobenzene	0.956	U	0.858	U	0.868	U	0.934	U	0.922	U
Lindane	0.478	U	0.429	U	0.434	U	0.467	U	0.461	U
Methoxychlor	4.780	U	4.290	U	4.340	U	4.670	U	4.610	U
Toxaphene	24.00	U	21.50	U	21.80	U	23.40	U	23.20	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 5									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
cis-Chlordane	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
trans-Chlordane	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
cis-Nonachlor	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
trans-Nonachlor	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Oxychlordane	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
Total Chlordanes	2.789		2.808		2.759		2.658		2.917	
4,4'-DDT	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
4,4'-DDD	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
4,4'-DDE	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Total DDT	1.395		1.404		1.380		1.329		1.458	
Dieldrin	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
alpha-Endosulfan	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
beta-Endosulfan	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Endosulfans	0.930		0.936		0.920		0.886		0.972	
Endrin	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Heptachlor	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Heptachlor epoxide	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
Hexachlorobenzene	0.929	U	0.936	U	0.919	U	0.886	U	0.973	U
Lindane	0.465	U	0.468	U	0.460	U	0.443	U	0.486	U
Methoxychlor	4.650	U	4.680	U	4.600	U	4.430	U	4.860	U
Toxaphene	23.30	U	23.50	U	23.10	U	22.20	U	24.40	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 6									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
cis-Chlordane	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
trans-Chlordane	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
cis-Nonachlor	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
trans-Nonachlor	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Oxychlordane	0.853	U	0.980	U	0.976	U	0.934	U	0.994	U
Total Chlordanes	2.561		2.940		2.928		2.802		2.982	
4,4'-DDT	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
4,4'-DDD	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
4,4'-DDE	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Total DDT	1.281		1.470		1.464		1.401		1.491	
Dieldrin	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
alpha-Endosulfan	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
beta-Endosulfan	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Endosulfans	0.854		0.980		0.976		0.934		0.994	
Endrin	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Heptachlor	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Heptachlor epoxide	0.853	U	0.980	U	0.976	U	0.934	U	0.994	U
Hexachlorobenzene	0.853	U	0.980	U	0.976	U	0.934	U	0.994	U
Lindane	0.427	U	0.490	U	0.488	U	0.467	U	0.497	U
Methoxychlor	4.270	U	4.900	U	4.880	U	4.670	U	4.970	U
Toxaphene	21.40	U	24.60	U	24.50	U	23.40	U	25.00	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 7									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
cis-Chlordane	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
trans-Chlordane	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
cis-Nonachlor	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
trans-Nonachlor	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Oxychlordane	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
Total Chlordanes	2.862		2.759		2.598		2.789		2.802	
4,4'-DDT	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
4,4'-DDD	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
4,4'-DDE	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Total DDT	1.431		1.380		1.299		1.395		1.401	
Dieldrin	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
alpha-Endosulfan	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
beta-Endosulfan	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Endosulfans	0.954		0.920		0.866		0.930		0.934	
Endrin	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Heptachlor	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Heptachlor epoxide	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
Hexachlorobenzene	0.954	U	0.919	U	0.866	U	0.929	U	0.934	U
Lindane	0.477	U	0.460	U	0.433	U	0.465	U	0.467	U
Methoxychlor	4.770	U	4.600	U	4.330	U	4.650	U	4.670	U
Toxaphene	24.00	U	23.10	U	21.80	U	23.30	U	23.40	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

Concentrations of COCs in *N. virens*
New Haven Harbor FNP, New Haven, CT

CONTAMINANT	Composite 8									
	REP1	*	REP2	*	REP3	*	REP4	*	REP5	*
Metals (ug/g wet weight)										
Pesticides (ng/g wet weight)										
Aldrin	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
cis-Chlordane	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
trans-Chlordane	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
cis-Nonachlor	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
trans-Nonachlor	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Oxychlordane	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
Total Chlordanes	2.742		2.934		2.514		2.561		2.651	
4,4'-DDT	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
4,4'-DDD	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
4,4'-DDE	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Total DDT	1.371		1.467		1.257		1.281		1.326	
Dieldrin	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
alpha-Endosulfan	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
beta-Endosulfan	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Endosulfans	0.914		0.978		0.838		0.854		0.884	
Endrin	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Heptachlor	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Heptachlor epoxide	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
Hexachlorobenzene	0.914	U	0.978	U	0.838	U	0.853	U	0.883	U
Lindane	0.457	U	0.489	U	0.419	U	0.427	U	0.442	U
Methoxychlor	4.570	U	4.890	U	4.190	U	4.270	U	4.420	U
Toxaphene	22.90	U	24.60	U	21.00	U	21.40	U	22.20	U

* = Qualifiers

U Analyte not detected; below Method

J Analyte estimated; detection below Method

NA Not Analyzed

CETIS Test Data Worksheet

Report Date: 28 Nov-17 15:17 (p 1 of 2)
Test Code/ID: 03-6397-7041/29525Nv-Pest

Bioaccumulation Evaluation - Pesticides - Nereis																				EnviroSystems, Inc.				
Start Date: 31 Aug-17			Species: Nereis virens					Sample Code: 29525-000																
End Date: 28 Sep-17			Protocol: US ACE NED RIM (2004)					Sample Source: New Haven Harbor FNP -2017																
Sample Date: 31 Aug-17			Material: Laboratory Control Sediment					Sample Station: Laboratory Control - 29525																
Sample	Rep	Pos	4,4'-DDD	4,4'-DDE	4,4'-DDT	aldrin	alpha-chlordane	alpha-BHC	beta-BHC	cis-Nonachlor	delta-BHC	Dieldrin	endosulfan I	endosulfan II	endrin	gamma-BHC (lindane)	gamma-chlordane	heptachlor	heptachlor epoxide	hexachlorobenzene	Methoxychlor	oxychlordane	toxaphene	trans-nonachlor
29517-009	1	14	0.438	0.438	0.438	0.438	0.438			0.438		0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.877	0.877	4.38	0.877	22	0.438
29517-009	2	23	0.466	0.466	0.466	0.466	0.466			0.466		0.466	0.466	0.466	0.466	0.466	0.466	0.466	0.931	0.931	4.66	0.931	23.4	0.466
29517-009	3	34	0.444	0.444	0.444	0.444	0.444			0.444		0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.888	0.888	4.44	0.888	22.3	0.444
29517-009	4	36	0.45	0.45	0.45	0.45	0.45			0.45		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.901	0.901	4.5	0.901	22.6	0.45
29517-009	5	33	0.494	0.494	0.494	0.494	0.494			0.494		0.494	0.494	0.494	0.494	0.494	0.494	0.494	0.988	0.988	4.94	0.988	24.8	0.494
29517-001	1	16	0.474	0.474	0.474	0.474	0.474			0.474		0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.949	0.949	4.74	0.949	23.8	0.474
29517-001	2	6	0.457	0.457	0.457	0.457	0.457			0.457		0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.914	0.914	4.57	0.914	22.9	0.457
29517-001	3	21	0.486	0.486	0.486	0.486	0.486			0.486		0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.973	0.973	4.86	0.973	24.4	0.486
29517-001	4	10	0.476	0.476	0.476	0.476	0.476			0.476		0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.952	0.952	4.76	0.952	23.9	0.476
29517-001	5	4	0.472	0.472	0.472	0.472	0.472			0.472		0.472	0.472	0.472	0.472	0.472	0.472	0.472	0.945	0.945	4.72	0.945	23.7	0.472
29517-002	1	31	0.485	0.485	0.485	0.485	0.485			0.485		0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.971	0.971	4.85	0.971	24.4	0.485
29517-002	2	5	0.46	0.46	0.46	0.46	0.46			0.46		0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.919	0.919	4.6	0.919	23.1	0.46
29517-002	3	17	0.421	0.421	0.421	0.421	0.421			0.421		0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.842	0.842	4.21	0.842	21.1	0.421
29517-002	4	25	0.488	0.488	0.488	0.488	0.488			0.488		0.488	0.488	0.488	0.488	0.488	0.488	0.488	0.976	0.976	4.88	0.976	24.5	0.488
29517-002	5	42	0.436	0.436	0.436	0.436	0.436			0.436		0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.871	0.871	4.36	0.871	21.9	0.436
29517-003	1	32	0.448	0.448	0.448	0.448	0.448			0.448		0.448	0.448	0.448	0.448	0.448	0.448	0.448	0.896	0.896	4.48	0.896	22.5	0.448
29517-003	2	1	0.437	0.437	0.437	0.437	0.437			0.437		0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.874	0.874	4.37	0.874	21.9	0.437
29517-003	3	41	0.496	0.496	0.496	0.496	0.496			0.496		0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.992	0.992	4.96	0.992	24.9	0.496
29517-003	4	27	0.479	0.479	0.479	0.479	0.479			0.479		0.479	0.479	0.479	0.479	0.479	0.479	0.479	0.958	0.958	4.79	0.958	24	0.479
29517-003	5	29	0.486	0.486	0.486	0.486	0.486			0.486		0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.973	0.973	4.86	0.973	24.4	0.486
29517-004	1	35	0.478	0.478	0.478	0.478	0.478			0.478		0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.956	0.956	4.78	0.956	24	0.478
29517-004	2	39	0.429	0.429	0.429	0.429	0.429			0.429		0.429	0.429	0.429	0.429	0.429	0.429	0.429	0.858	0.858	4.29	0.858	21.5	0.429
29517-004	3	28	0.434	0.434	0.434	0.434	0.434			0.434		0.434	0.434	0.434	0.434	0.434	0.434	0.434	0.868	0.868	4.34	0.868	21.8	0.434
29517-004	4	7	0.467	0.467	0.467	0.467	0.467			0.467		0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.934	0.934	4.67	0.934	23.4	0.467
29517-004	5	19	0.461	0.461	0.461	0.461	0.461			0.461		0.461	0.461	0.461	0.461	0.461	0.461	0.461	0.922	0.922	4.61	0.922	23.2	0.461
29517-005	1	26	0.465	0.465	0.465	0.465	0.465			0.465		0.465	0.465	0.465	0.465	0.465	0.465	0.465	0.929	0.929	4.65	0.929	23.3	0.465
29517-005	2	15	0.468	0.468	0.468	0.468	0.468			0.468		0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.936	0.936	4.68	0.936	23.5	0.468
29517-005	3	37	0.46	0.46	0.46	0.46	0.46			0.46		0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.919	0.919	4.6	0.919	23.1	0.46
29517-005	4	3	0.443	0.443	0.443	0.443	0.443			0.443		0.443	0.443	0.443	0.443	0.443	0.443	0.443	0.886	0.886	4.43	0.886	22.2	0.443

CETIS Test Data Worksheet

Report Date: 28 Nov-17 15:17 (p 2 of 2)

Test Code/ID: 03-6397-7041/29525Nv-Pest

Sample	Rep	Pos	4-4'-DDD	4-4'-DDE	4-4'-DDT	aldrin	alpha-chlordane	alpha-BHC	beta-BHC	cis-Nonachlor	delta-BHC	Dieldrin	endosulfan I	endosulfan II	endrin	gamma-BHC (Lindane)	gamma-chlordane	heptachlor	heptachlor epoxide	hexachlorobenzene	Methoxychlor	oxychlordane	toxaphene	trans-nonachlor
29517-005	5	9	0.486	0.486	0.486	0.486	0.486			0.486		0.486	0.486	0.486	0.486	0.486	0.486	0.486	0.973	0.973	4.86	0.973	24.4	0.486
29517-006	1	12	0.427	0.427	0.427	0.427	0.427			0.427		0.427	0.427	0.427	0.427	0.427	0.427	0.427	0.853	0.853	4.27	0.853	21.4	0.427
29517-006	2	30	0.49	0.49	0.49	0.49	0.49			0.49		0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.98	0.98	4.9	0.98	24.6	0.49
29517-006	3	18	0.488	0.488	0.488	0.488	0.488			0.488		0.488	0.488	0.488	0.488	0.488	0.488	0.488	0.976	0.976	4.88	0.976	24.5	0.488
29517-006	4	24	0.467	0.467	0.467	0.467	0.467			0.467		0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.934	0.934	4.67	0.934	23.4	0.467
29517-006	5	40	0.497	0.497	0.497	0.497	0.497			0.497		0.497	0.497	0.497	0.497	0.497	0.497	0.497	0.994	0.994	4.97	0.994	25	0.497
59517-007	1	22	0.477	0.477	0.477	0.477	0.477			0.477		0.477	0.477	0.477	0.477	0.477	0.477	0.477	0.954	0.954	4.77	0.954	24	0.477
59517-007	2	13	0.46	0.46	0.46	0.46	0.46			0.46		0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.919	0.919	4.6	0.919	23.1	0.46
59517-007	3	20	0.433	0.433	0.433	0.433	0.433			0.433		0.433	0.433	0.433	0.433	0.433	0.433	0.433	0.866	0.866	4.33	0.866	21.8	0.433
59517-007	4	38	0.465	0.465	0.465	0.465	0.465			0.465		0.465	0.465	0.465	0.465	0.465	0.465	0.465	0.929	0.929	4.65	0.929	23.3	0.465
59517-007	5	8	0.467	0.467	0.467	0.467	0.467			0.467		0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.934	0.934	4.67	0.934	23.4	0.467
29517-008	1	11	0.457	0.457	0.457	0.457	0.457			0.457		0.457	0.457	0.457	0.457	0.457	0.457	0.457	0.914	0.914	4.57	0.914	22.9	0.457
29517-008	2	2	0.489	0.489	0.489	0.489	0.489			0.489		0.489	0.489	0.489	0.489	0.489	0.489	0.489	0.978	0.978	4.89	0.978	24.6	0.489
29517-008	3	44	0.419	0.419	0.419	0.419	0.419			0.419		0.419	0.419	0.419	0.419	0.419	0.419	0.419	0.838	0.838	4.19	0.838	21	0.419
29517-008	4	43	0.427	0.427	0.427	0.427	0.427			0.427		0.427	0.427	0.427	0.427	0.427	0.427	0.427	0.853	0.853	4.27	0.853	21.4	0.427
29517-008	5	45	0.442	0.442	0.442	0.442	0.442			0.442		0.442	0.442	0.442	0.442	0.442	0.442	0.442	0.883	0.883	4.42	0.883	22.2	0.442

CETIS Summary Report

Report Date: 29 Nov-17 10:37 (p 1 of 14)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis					EnviroSystems, Inc.	
Batch ID:	08-4838-4372	Test Type:	Bioaccumulation - Pesticides	Analyst:	Nancy Roka	
Start Date:	31 Aug-17	Protocol:	US ACE NED RIM (2004)	Diluent:	Not Applicable	
Ending Date:	28 Sep-17	Species:	Nereis virens	Brine:	Not Applicable	
Duration:	28d 0h	Source:	ARO - Aquatic Research Organisms, NH	Age:		
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h		
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h		
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h		
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h		
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h		
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h		
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h		
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h		
Sample Code	Material Type	Sample Source	Station Location	Lat/Long		
29517-009	Reference sediment	New Haven Harbor FNP -2017	CLDS Reference Site			
29517-001	Marine Sediment	New Haven Harbor FNP -2017	Composite 1 (Sta C)			
29517-002	Marine Sediment	New Haven Harbor FNP -2017	Composite 2 (Sta D,E,F)			
29517-003	Marine Sediment	New Haven Harbor FNP -2017	Composite 3 (Sta G,H,I)			
29517-004	Marine Sediment	New Haven Harbor FNP -2017	Composite 4 (Sta J,K,L)			
29517-005	Marine Sediment	New Haven Harbor FNP -2017	Composite 5 (Sta M,N,O)			
29517-006	Marine Sediment	New Haven Harbor FNP -2017	Composite 6 (Sta P,Q,R,S)			
59517-007	Marine Sediment	New Haven Harbor FNP -2017	Composite 7 (Sta T,U,V,W)			
29517-008	Marine Sediment	New Haven Harbor FNP -2017	Composite 8 (Sta X,Y,Z)			
Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
07-6612-1679	4-4'-DDD	Equal Variance t Two-Sample Test	0.1120	29517-001	passed 4-4'-ddd	
09-1134-1471	4-4'-DDD	Equal Variance t Two-Sample Test	0.5093	29517-002	passed 4-4'-ddd	
14-1115-9157	4-4'-DDD	Equal Variance t Two-Sample Test	0.2484	29517-003	passed 4-4'-ddd	
07-4287-4966	4-4'-DDD	Equal Variance t Two-Sample Test	0.6258	29517-004	passed 4-4'-ddd	
17-8722-8104	4-4'-DDD	Equal Variance t Two-Sample Test	0.3180	29517-005	passed 4-4'-ddd	
04-4928-6423	4-4'-DDD	Equal Variance t Two-Sample Test	0.1850	29517-006	passed 4-4'-ddd	
01-1810-4593	4-4'-DDD	Equal Variance t Two-Sample Test	0.4383	59517-007	passed 4-4'-ddd	
16-5127-0736	4-4'-DDD	Equal Variance t Two-Sample Test	0.7560	29517-008	passed 4-4'-ddd	
01-9010-6099	4-4'-DDE	Equal Variance t Two-Sample Test	0.1120	29517-001	passed 4-4'-dde	
09-8311-6076	4-4'-DDE	Equal Variance t Two-Sample Test	0.5093	29517-002	passed 4-4'-dde	
08-1594-7656	4-4'-DDE	Equal Variance t Two-Sample Test	0.2484	29517-003	passed 4-4'-dde	
02-2226-6567	4-4'-DDE	Equal Variance t Two-Sample Test	0.6258	29517-004	passed 4-4'-dde	
00-7104-1782	4-4'-DDE	Equal Variance t Two-Sample Test	0.3180	29517-005	passed 4-4'-dde	
02-6483-8603	4-4'-DDE	Equal Variance t Two-Sample Test	0.1850	29517-006	passed 4-4'-dde	
00-3464-9566	4-4'-DDE	Equal Variance t Two-Sample Test	0.4383	59517-007	passed 4-4'-dde	
17-4318-0611	4-4'-DDE	Equal Variance t Two-Sample Test	0.7560	29517-008	passed 4-4'-dde	
04-8446-7196	4-4'-DDT	Equal Variance t Two-Sample Test	0.1120	29517-001	passed 4-4'-ddt	
09-1495-6711	4-4'-DDT	Equal Variance t Two-Sample Test	0.5093	29517-002	passed 4-4'-ddt	
00-1419-3166	4-4'-DDT	Equal Variance t Two-Sample Test	0.2484	29517-003	passed 4-4'-ddt	
14-8649-0714	4-4'-DDT	Equal Variance t Two-Sample Test	0.6258	29517-004	passed 4-4'-ddt	
08-6662-5942	4-4'-DDT	Equal Variance t Two-Sample Test	0.3180	29517-005	passed 4-4'-ddt	
21-3177-2574	4-4'-DDT	Equal Variance t Two-Sample Test	0.1850	29517-006	passed 4-4'-ddt	
07-2633-1733	4-4'-DDT	Equal Variance t Two-Sample Test	0.4383	59517-007	passed 4-4'-ddt	
17-8780-1164	4-4'-DDT	Equal Variance t Two-Sample Test	0.7560	29517-008	passed 4-4'-ddt	
00-9946-9728	aldrin	Equal Variance t Two-Sample Test	0.1120	29517-001	passed aldrin	
07-5599-3600	aldrin	Equal Variance t Two-Sample Test	0.5093	29517-002	passed aldrin	
14-1246-9181	aldrin	Equal Variance t Two-Sample Test	0.2484	29517-003	passed aldrin	

CETIS Summary Report

Report Date: 29 Nov-17 10:37 (p 2 of 14)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
17-9188-1807	aldrin	Equal Variance t Two-Sample Test	0.6258	29517-004 passed aldrin
19-3472-3680	aldrin	Equal Variance t Two-Sample Test	0.3180	29517-005 passed aldrin
19-1191-4313	aldrin	Equal Variance t Two-Sample Test	0.1850	29517-006 passed aldrin
05-5238-5212	aldrin	Equal Variance t Two-Sample Test	0.4383	59517-007 passed aldrin
01-1804-5203	aldrin	Equal Variance t Two-Sample Test	0.7560	29517-008 passed aldrin
12-7723-8685	alpha chlordane	Equal Variance t Two-Sample Test	0.1120	29517-001 passed alpha chlordane (trans)
03-3020-9872	alpha chlordane	Equal Variance t Two-Sample Test	0.5093	29517-002 passed alpha chlordane (trans)
16-2005-5106	alpha chlordane	Equal Variance t Two-Sample Test	0.2484	29517-003 passed alpha chlordane (trans)
10-4277-3326	alpha chlordane	Equal Variance t Two-Sample Test	0.6258	29517-004 passed alpha chlordane (trans)
12-2843-9606	alpha chlordane	Equal Variance t Two-Sample Test	0.3180	29517-005 passed alpha chlordane (trans)
12-2451-7516	alpha chlordane	Equal Variance t Two-Sample Test	0.1850	29517-006 passed alpha chlordane (trans)
21-0403-8548	alpha chlordane	Equal Variance t Two-Sample Test	0.4383	59517-007 passed alpha chlordane (trans)
12-7491-5550	alpha chlordane	Equal Variance t Two-Sample Test	0.7560	29517-008 passed alpha chlordane (trans)
03-3306-3705	cis-Nonachlor	Equal Variance t Two-Sample Test	0.1120	29517-001 passed cis-nonachlor
11-9156-6760	cis-Nonachlor	Equal Variance t Two-Sample Test	0.5093	29517-002 passed cis-nonachlor
11-9426-8579	cis-Nonachlor	Equal Variance t Two-Sample Test	0.2484	29517-003 passed cis-nonachlor
08-2448-6474	cis-Nonachlor	Equal Variance t Two-Sample Test	0.6258	29517-004 passed cis-nonachlor
01-2319-0414	cis-Nonachlor	Equal Variance t Two-Sample Test	0.3180	29517-005 passed cis-nonachlor
15-6505-0598	cis-Nonachlor	Equal Variance t Two-Sample Test	0.1850	29517-006 passed cis-nonachlor
06-4538-9882	cis-Nonachlor	Equal Variance t Two-Sample Test	0.4383	59517-007 passed cis-nonachlor
14-7724-2950	cis-Nonachlor	Equal Variance t Two-Sample Test	0.7560	29517-008 passed cis-nonachlor
12-5435-9965	Dieldrin	Equal Variance t Two-Sample Test	0.1120	29517-001 passed dieldrin
11-5152-3038	Dieldrin	Equal Variance t Two-Sample Test	0.5093	29517-002 passed dieldrin
10-9444-9433	Dieldrin	Equal Variance t Two-Sample Test	0.2484	29517-003 passed dieldrin
07-5418-2473	Dieldrin	Equal Variance t Two-Sample Test	0.6258	29517-004 passed dieldrin
07-4283-7085	Dieldrin	Equal Variance t Two-Sample Test	0.3180	29517-005 passed dieldrin
13-9494-7725	Dieldrin	Equal Variance t Two-Sample Test	0.1850	29517-006 passed dieldrin
15-7798-1624	Dieldrin	Equal Variance t Two-Sample Test	0.4383	59517-007 passed dieldrin
07-4733-3718	Dieldrin	Equal Variance t Two-Sample Test	0.7560	29517-008 passed dieldrin
10-7835-3313	endosulfan I	Equal Variance t Two-Sample Test	0.1120	29517-001 passed endosulfan i
06-5035-1248	endosulfan I	Equal Variance t Two-Sample Test	0.5093	29517-002 passed endosulfan i
14-1444-8568	endosulfan I	Equal Variance t Two-Sample Test	0.2484	29517-003 passed endosulfan i
20-3974-0028	endosulfan I	Equal Variance t Two-Sample Test	0.6258	29517-004 passed endosulfan i
20-9895-0283	endosulfan I	Equal Variance t Two-Sample Test	0.3180	29517-005 passed endosulfan i
21-2758-9765	endosulfan I	Equal Variance t Two-Sample Test	0.1850	29517-006 passed endosulfan i
01-6038-3885	endosulfan I	Equal Variance t Two-Sample Test	0.4383	59517-007 passed endosulfan i
03-5576-2142	endosulfan I	Equal Variance t Two-Sample Test	0.7560	29517-008 passed endosulfan i
08-4260-7045	endosulfan II	Equal Variance t Two-Sample Test	0.1120	29517-001 passed endosulfan ii
07-0125-0536	endosulfan II	Equal Variance t Two-Sample Test	0.5093	29517-002 passed endosulfan ii
12-7942-3476	endosulfan II	Equal Variance t Two-Sample Test	0.2484	29517-003 passed endosulfan ii
09-7312-7619	endosulfan II	Equal Variance t Two-Sample Test	0.6258	29517-004 passed endosulfan ii
07-2001-7781	endosulfan II	Equal Variance t Two-Sample Test	0.3180	29517-005 passed endosulfan ii
07-2788-6853	endosulfan II	Equal Variance t Two-Sample Test	0.1850	29517-006 passed endosulfan ii
18-9398-0652	endosulfan II	Equal Variance t Two-Sample Test	0.4383	59517-007 passed endosulfan ii
07-9978-0990	endosulfan II	Equal Variance t Two-Sample Test	0.7560	29517-008 passed endosulfan ii
18-4772-1635	endrin	Equal Variance t Two-Sample Test	0.1120	29517-001 passed endrin
05-9013-8391	endrin	Equal Variance t Two-Sample Test	0.5093	29517-002 passed endrin
08-3117-4619	endrin	Equal Variance t Two-Sample Test	0.2484	29517-003 passed endrin
14-7266-3558	endrin	Equal Variance t Two-Sample Test	0.6258	29517-004 passed endrin
13-9892-3944	endrin	Equal Variance t Two-Sample Test	0.3180	29517-005 passed endrin
02-7529-7262	endrin	Equal Variance t Two-Sample Test	0.1850	29517-006 passed endrin
11-5968-8083	endrin	Equal Variance t Two-Sample Test	0.4383	59517-007 passed endrin
03-7383-5567	endrin	Equal Variance t Two-Sample Test	0.7560	29517-008 passed endrin

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Bioaccumulation Evaluation - Pesticides - Nereis				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
20-9583-6342	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.1120	29517-001 passed gamma-bhc (lindane)
03-2995-9218	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.5093	29517-002 passed gamma-bhc (lindane)
09-1467-8639	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.2484	29517-003 passed gamma-bhc (lindane)
06-7230-9624	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.6258	29517-004 passed gamma-bhc (lindane)
18-7527-9713	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.3180	29517-005 passed gamma-bhc (lindane)
17-6000-2176	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.1850	29517-006 passed gamma-bhc (lindane)
00-3509-9804	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.4383	59517-007 passed gamma-bhc (lindane)
18-5619-3579	gamma-BHC (Lindane)	Equal Variance t Two-Sample Test	0.7560	29517-008 passed gamma-bhc (lindane)
19-7446-4166	gamma-chlordane	Equal Variance t Two-Sample Test	0.1120	29517-001 passed gamma-chlordane (cis)
04-9133-3917	gamma-chlordane	Equal Variance t Two-Sample Test	0.5093	29517-002 passed gamma-chlordane (cis)
01-8753-3720	gamma-chlordane	Equal Variance t Two-Sample Test	0.2484	29517-003 passed gamma-chlordane (cis)
14-8336-5840	gamma-chlordane	Equal Variance t Two-Sample Test	0.6258	29517-004 passed gamma-chlordane (cis)
03-7185-0974	gamma-chlordane	Equal Variance t Two-Sample Test	0.3180	29517-005 passed gamma-chlordane (cis)
02-8423-5902	gamma-chlordane	Equal Variance t Two-Sample Test	0.1850	29517-006 passed gamma-chlordane (cis)
01-0020-8573	gamma-chlordane	Equal Variance t Two-Sample Test	0.4383	59517-007 passed gamma-chlordane (cis)
06-4545-1797	gamma-chlordane	Equal Variance t Two-Sample Test	0.7560	29517-008 passed gamma-chlordane (cis)
14-4352-6508	heptachlor	Equal Variance t Two-Sample Test	0.1120	29517-001 passed heptachlor
04-4272-7118	heptachlor	Equal Variance t Two-Sample Test	0.5093	29517-002 passed heptachlor
18-5880-9172	heptachlor	Equal Variance t Two-Sample Test	0.2484	29517-003 passed heptachlor
10-6899-9747	heptachlor	Equal Variance t Two-Sample Test	0.6258	29517-004 passed heptachlor
17-6712-2670	heptachlor	Equal Variance t Two-Sample Test	0.3180	29517-005 passed heptachlor
13-1153-0567	heptachlor	Equal Variance t Two-Sample Test	0.1850	29517-006 passed heptachlor
13-7268-5645	heptachlor	Equal Variance t Two-Sample Test	0.4383	59517-007 passed heptachlor
09-6690-5374	heptachlor	Equal Variance t Two-Sample Test	0.7560	29517-008 passed heptachlor
17-5520-6912	heptachlor epoxide	Equal Variance t Two-Sample Test	0.1082	29517-001 passed heptachlor epoxide
09-1390-5412	heptachlor epoxide	Equal Variance t Two-Sample Test	0.5140	29517-002 passed heptachlor epoxide
21-0007-5630	heptachlor epoxide	Equal Variance t Two-Sample Test	0.2479	29517-003 passed heptachlor epoxide
17-2660-1167	heptachlor epoxide	Equal Variance t Two-Sample Test	0.6290	29517-004 passed heptachlor epoxide
20-6858-9696	heptachlor epoxide	Equal Variance t Two-Sample Test	0.3233	29517-005 passed heptachlor epoxide
02-2877-3708	heptachlor epoxide	Equal Variance t Two-Sample Test	0.1882	29517-006 passed heptachlor epoxide
16-8139-7286	heptachlor epoxide	Equal Variance t Two-Sample Test	0.4471	59517-007 passed heptachlor epoxide
00-2431-2539	heptachlor epoxide	Equal Variance t Two-Sample Test	0.7617	29517-008 passed heptachlor epoxide
03-6559-1156	hexachlorobenzene	Equal Variance t Two-Sample Test	0.1082	29517-001 passed hexachlorobenzene
06-9289-8894	hexachlorobenzene	Equal Variance t Two-Sample Test	0.5140	29517-002 passed hexachlorobenzene
00-6933-7770	hexachlorobenzene	Equal Variance t Two-Sample Test	0.2479	29517-003 passed hexachlorobenzene
07-2938-4294	hexachlorobenzene	Equal Variance t Two-Sample Test	0.6290	29517-004 passed hexachlorobenzene
09-6153-1346	hexachlorobenzene	Equal Variance t Two-Sample Test	0.3233	29517-005 passed hexachlorobenzene
11-6437-1173	hexachlorobenzene	Equal Variance t Two-Sample Test	0.1882	29517-006 passed hexachlorobenzene
07-1670-1300	hexachlorobenzene	Equal Variance t Two-Sample Test	0.4471	59517-007 passed hexachlorobenzene
18-8407-7674	hexachlorobenzene	Equal Variance t Two-Sample Test	0.7617	29517-008 passed hexachlorobenzene
14-6103-2240	Methoxychlor	Equal Variance t Two-Sample Test	0.1120	29517-001 passed methoxychlor
08-8785-2909	Methoxychlor	Equal Variance t Two-Sample Test	0.5093	29517-002 passed methoxychlor
20-2370-7603	Methoxychlor	Equal Variance t Two-Sample Test	0.2484	29517-003 passed methoxychlor
17-7588-4389	Methoxychlor	Equal Variance t Two-Sample Test	0.6258	29517-004 passed methoxychlor
05-9627-8669	Methoxychlor	Equal Variance t Two-Sample Test	0.3180	29517-005 passed methoxychlor
19-0750-9794	Methoxychlor	Equal Variance t Two-Sample Test	0.1850	29517-006 passed methoxychlor
00-2049-5795	Methoxychlor	Equal Variance t Two-Sample Test	0.4383	59517-007 passed methoxychlor
05-1492-1370	Methoxychlor	Equal Variance t Two-Sample Test	0.7560	29517-008 passed methoxychlor
16-5947-0442	oxychlordane	Equal Variance t Two-Sample Test	0.1082	29517-001 passed oxychlordane
02-2613-1593	oxychlordane	Equal Variance t Two-Sample Test	0.5140	29517-002 passed oxychlordane
21-3016-4961	oxychlordane	Equal Variance t Two-Sample Test	0.2479	29517-003 passed oxychlordane
11-1113-7859	oxychlordane	Equal Variance t Two-Sample Test	0.6290	29517-004 passed oxychlordane
00-8729-5708	oxychlordane	Equal Variance t Two-Sample Test	0.3233	29517-005 passed oxychlordane

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Bioaccumulation Evaluation - Pesticides - Nereis				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
07-5319-9524	oxychlordane	Equal Variance t Two-Sample Test	0.1882	29517-006 passed oxychlordane
16-2353-9255	oxychlordane	Equal Variance t Two-Sample Test	0.4471	59517-007 passed oxychlordane
21-2476-6861	oxychlordane	Equal Variance t Two-Sample Test	0.7617	29517-008 passed oxychlordane
07-6936-2362	toxaphene	Equal Variance t Two-Sample Test	0.1164	29517-001 passed toxaphene
12-8612-2120	toxaphene	Equal Variance t Two-Sample Test	0.5092	29517-002 passed toxaphene
15-0143-5572	toxaphene	Equal Variance t Two-Sample Test	0.2572	29517-003 passed toxaphene
19-6317-3383	toxaphene	Equal Variance t Two-Sample Test	0.6304	29517-004 passed toxaphene
14-2654-1881	toxaphene	Equal Variance t Two-Sample Test	0.3303	29517-005 passed toxaphene
00-2097-7125	toxaphene	Equal Variance t Two-Sample Test	0.1913	29517-006 passed toxaphene
20-8723-0427	toxaphene	Equal Variance t Two-Sample Test	0.4379	59517-007 passed toxaphene
15-6493-6900	toxaphene	Equal Variance t Two-Sample Test	0.7599	29517-008 passed toxaphene
10-7993-7853	trans-nonachlor	Equal Variance t Two-Sample Test	0.1120	29517-001 passed trans-nonachlor
16-2286-4093	trans-nonachlor	Equal Variance t Two-Sample Test	0.5093	29517-002 passed trans-nonachlor
11-4507-4212	trans-nonachlor	Equal Variance t Two-Sample Test	0.2484	29517-003 passed trans-nonachlor
07-8926-3049	trans-nonachlor	Equal Variance t Two-Sample Test	0.6258	29517-004 passed trans-nonachlor
05-1517-9197	trans-nonachlor	Equal Variance t Two-Sample Test	0.3180	29517-005 passed trans-nonachlor
12-2688-9639	trans-nonachlor	Equal Variance t Two-Sample Test	0.1850	29517-006 passed trans-nonachlor
17-8056-6285	trans-nonachlor	Equal Variance t Two-Sample Test	0.4383	59517-007 passed trans-nonachlor
15-6169-3885	trans-nonachlor	Equal Variance t Two-Sample Test	0.7560	29517-008 passed trans-nonachlor

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Bioaccumulation Evaluation - Pesticides - Nereis											EnviroSystems, Inc.
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%

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Bioaccumulation Evaluation - Pesticides - Nereis											EnviroSystems, Inc.
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%

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Bioaccumulation Evaluation - Pesticides - Nereis											EnviroSystems, Inc.
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%

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Bioaccumulation Evaluation - Pesticides - Nereis											EnviroSystems, Inc.
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.877	0.988	0.0199	0.0445	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.914	0.973	0.00948	0.0212	2.24%	-3.23%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	0.13%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-2.36%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	1.03%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-1.26%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-3.32%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-0.37%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	2.60%
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.877	0.988	0.0199	0.0445	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.914	0.973	0.00948	0.0212	2.24%	-3.23%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	0.13%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-2.36%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	1.03%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-1.26%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-3.32%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-0.37%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	2.60%
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.38	4.94	0.1	0.225	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.57	4.86	0.0467	0.104	2.21%	-3.18%
29517-002		5	4.58	4.21	4.95	4.21	4.88	0.132	0.295	6.45%	0.09%
29517-003		5	4.69	4.38	5.01	4.37	4.96	0.114	0.254	5.42%	-2.36%
29517-004		5	4.54	4.27	4.8	4.29	4.78	0.0954	0.213	4.70%	1.00%
29517-005		5	4.64	4.45	4.84	4.43	4.86	0.0692	0.155	3.33%	-1.31%
29517-006		5	4.74	4.38	5.09	4.27	4.97	0.127	0.285	6.01%	-3.36%
59517-007		5	4.6	4.4	4.81	4.33	4.77	0.0739	0.165	3.59%	-0.44%
29517-008		5	4.47	4.12	4.81	4.19	4.89	0.124	0.277	6.20%	2.53%

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.877	0.988	0.0199	0.0445	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.914	0.973	0.00948	0.0212	2.24%	-3.23%
29517-002		5	0.916	0.842	0.99	0.842	0.976	0.0266	0.0594	6.49%	0.13%
29517-003		5	0.939	0.875	1	0.874	0.992	0.0228	0.051	5.43%	-2.36%
29517-004		5	0.908	0.855	0.961	0.858	0.956	0.0191	0.0426	4.70%	1.03%
29517-005		5	0.929	0.89	0.968	0.886	0.973	0.014	0.0314	3.38%	-1.26%
29517-006		5	0.947	0.876	1.02	0.853	0.994	0.0256	0.0573	6.05%	-3.32%
59517-007		5	0.92	0.879	0.961	0.866	0.954	0.0147	0.033	3.58%	-0.37%
29517-008		5	0.893	0.824	0.962	0.838	0.978	0.0249	0.0557	6.23%	2.60%
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22	24.8	0.502	1.12	4.88%	0.00%
29517-001		5	23.7	23.1	24.4	22.9	24.4	0.242	0.541	2.28%	-3.13%
29517-002		5	23	21.1	24.9	21.1	24.5	0.672	1.5	6.54%	0.09%
29517-003		5	23.5	21.9	25.1	21.9	24.9	0.573	1.28	5.45%	-2.26%
29517-004		5	22.8	21.4	24.1	21.5	24	0.482	1.08	4.73%	1.04%
29517-005		5	23.3	22.3	24.3	22.2	24.4	0.354	0.791	3.39%	-1.22%
29517-006		5	23.8	22	25.6	21.4	25	0.651	1.46	6.13%	-3.30%
59517-007		5	23.1	22.1	24.1	21.8	24	0.362	0.811	3.51%	-0.43%
29517-008		5	22.4	20.7	24.2	21	24.6	0.636	1.42	6.34%	2.61%
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.438	0.494	0.01	0.0225	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.457	0.486	0.00467	0.0104	2.21%	-3.18%
29517-002		5	0.458	0.421	0.495	0.421	0.488	0.0132	0.0295	6.45%	0.09%
29517-003		5	0.469	0.438	0.501	0.437	0.496	0.0114	0.0254	5.42%	-2.36%
29517-004		5	0.454	0.427	0.48	0.429	0.478	0.00954	0.0213	4.70%	1.00%
29517-005		5	0.464	0.445	0.484	0.443	0.486	0.00692	0.0155	3.33%	-1.31%
29517-006		5	0.474	0.438	0.509	0.427	0.497	0.0127	0.0285	6.01%	-3.36%
59517-007		5	0.46	0.44	0.481	0.433	0.477	0.00739	0.0165	3.59%	-0.44%
29517-008		5	0.447	0.412	0.481	0.419	0.489	0.0124	0.0277	6.20%	2.53%

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Bioaccumulation Evaluation - Pesticides - Nereis						EnviroSystems, Inc.
4-4'-DDD Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
4-4'-DDE Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
4-4'-DDT Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
aldrin Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442

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Bioaccumulation Evaluation - Pesticides - Nereis						EnviroSystems, Inc.
alpha chlordane Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
cis-Nonachlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
Dieldrin Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
endosulfan I Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442

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Bioaccumulation Evaluation - Pesticides - Nereis						EnviroSystems, Inc.
endosulfan II Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
endrin Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
gamma-BHC (Lindane) Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
gamma-chlordane Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442

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Bioaccumulation Evaluation - Pesticides - Nereis						EnviroSystems, Inc.
heptachlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442
heptachlor epoxide Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.877	0.931	0.888	0.901	0.988
29517-001		0.949	0.914	0.973	0.952	0.945
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
hexachlorobenzene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.877	0.931	0.888	0.901	0.988
29517-001		0.949	0.914	0.973	0.952	0.945
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
Methoxychlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	4.38	4.66	4.44	4.5	4.94
29517-001		4.74	4.57	4.86	4.76	4.72
29517-002		4.85	4.6	4.21	4.88	4.36
29517-003		4.48	4.37	4.96	4.79	4.86
29517-004		4.78	4.29	4.34	4.67	4.61
29517-005		4.65	4.68	4.6	4.43	4.86
29517-006		4.27	4.9	4.88	4.67	4.97
59517-007		4.77	4.6	4.33	4.65	4.67
29517-008		4.57	4.89	4.19	4.27	4.42

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Bioaccumulation Evaluation - Pesticides - Nereis						EnviroSystems, Inc.
oxychlordane Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.877	0.931	0.888	0.901	0.988
29517-001		0.949	0.914	0.973	0.952	0.945
29517-002		0.971	0.919	0.842	0.976	0.871
29517-003		0.896	0.874	0.992	0.958	0.973
29517-004		0.956	0.858	0.868	0.934	0.922
29517-005		0.929	0.936	0.919	0.886	0.973
29517-006		0.853	0.98	0.976	0.934	0.994
59517-007		0.954	0.919	0.866	0.929	0.934
29517-008		0.914	0.978	0.838	0.853	0.883
toxaphene Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	22	23.4	22.3	22.6	24.8
29517-001		23.8	22.9	24.4	23.9	23.7
29517-002		24.4	23.1	21.1	24.5	21.9
29517-003		22.5	21.9	24.9	24	24.4
29517-004		24	21.5	21.8	23.4	23.2
29517-005		23.3	23.5	23.1	22.2	24.4
29517-006		21.4	24.6	24.5	23.4	25
59517-007		24	23.1	21.8	23.3	23.4
29517-008		22.9	24.6	21	21.4	22.2
trans-nonachlor Detail						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
29517-009	RS	0.438	0.466	0.444	0.45	0.494
29517-001		0.474	0.457	0.486	0.476	0.472
29517-002		0.485	0.46	0.421	0.488	0.436
29517-003		0.448	0.437	0.496	0.479	0.486
29517-004		0.478	0.429	0.434	0.467	0.461
29517-005		0.465	0.468	0.46	0.443	0.486
29517-006		0.427	0.49	0.488	0.467	0.497
59517-007		0.477	0.46	0.433	0.465	0.467
29517-008		0.457	0.489	0.419	0.427	0.442

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-6612-1679		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed 4-4'-ddd				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1134-1471		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed 4-4'-ddd			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.73	23.2	0.6098	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.943	0.741	0.5824	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1115-9157		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed 4-4'-ddd			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect		
Error		0.004602		0.0005753		8					
Total		0.0048936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-4287-4966		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed 4-4'-ddd			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8722-8104		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed 4-4'-ddd			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.11	23.2	0.4875	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5584	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4928-6423		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed 4-4'-ddd				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1810-4593		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed 4-4'-ddd				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-5127-0736		Endpoint: 4-4'-DDD					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed 4-4'-ddd				6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
4-4'-DDD Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
4-4'-DDD Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-9010-6099		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed 4-4'-dde			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-8311-6076		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed 4-4'-dde			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.73	23.2	0.6098		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5824		Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-1594-7656		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed 4-4'-dde			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-2226-6567		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed 4-4'-dde			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect			
Error	0.003838		0.0004798		8						
Total	0.0038909				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.11	23.2	0.9217	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.929	0.741	0.4420	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-7104-1782		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed 4-4'-dde			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.11	23.2	0.4875	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5584	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-6483-8603		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed 4-4'-dde				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-3464-9566		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed 4-4'-dde				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.85	23.2	0.5657		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341		Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-4318-0611		Endpoint: 4-4'-DDE					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed 4-4'-dde			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.52	23.2	0.6941	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.904	0.741	0.2442	Normal Distribution			
4-4'-DDE Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
4-4'-DDE Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-8446-7196		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed 4-4'-ddt			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1495-6711		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed 4-4'-ddt			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.73	23.2	0.6098		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5824		Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-1419-3166		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed 4-4'-ddt				6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-8649-0714		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed 4-4'-ddt			5.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-6662-5942		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed 4-4'-ddt				4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect		
Error		0.0029764		0.0003721		8					
Total		0.0030664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-3177-2574		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed 4-4'-ddt				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2633-1733		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed 4-4'-ddt				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.85	23.2	0.5657		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341		Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Report Date: 29 Nov-17 10:32 (p 24 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8780-1164		Endpoint: 4-4'-DDT					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed 4-4'-ddt				6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
4-4'-DDT Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
4-4'-DDT Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-9946-9728		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-001	Marine Sediment	New Haven Harbor FNP -2017		Composite 1 (Sta C)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed aldrin				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-5599-3600		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed aldrin			6.73%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect		
Error		0.0055052		0.0006882		8					
Total		0.0055056				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Report Date: 29 Nov-17 10:32 (p 27 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1246-9181		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed aldrin				6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Report Date: 29 Nov-17 10:32 (p 28 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-9188-1807		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed aldrin			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Report Date: 29 Nov-17 10:32 (p 29 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-3472-3680		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed aldrin			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.11	23.2	0.4875	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5584	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-1191-4313		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-006 passed aldrin			6.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		0.0005929	0.0005929		1	0.902	0.3700	Non-Significant Effect			
Error		0.005258	0.0006573		8						
Total		0.0058509			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-5238-5212		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed aldrin			5.06%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-1804-5203		Endpoint: aldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed aldrin			6.47%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
aldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
aldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-7723-8685		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed alpha chlordane (trans)				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-3020-9872		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed alpha chlordane (trans)				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect		
Error		0.0055052		0.0006882		8					
Total		0.0055056				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-2005-5106		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed alpha chlordane (trans)			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.28	23.2	0.8172	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.954	0.741	0.7213	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-4277-3326		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-004 passed alpha chlordane (trans)				5.62%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-2843-9606		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed alpha chlordane (trans)			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect		
Error		0.0029764		0.0003721		8					
Total		0.0030664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-2451-7516		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed alpha chlordane (trans)				6.58%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-0403-8548		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed alpha chlordane (trans)			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-7491-5550		Endpoint: alpha chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed alpha chlordane (trans)			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.52	23.2	0.6941	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.904	0.741	0.2442	Normal Distribution			
alpha chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
alpha chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-3306-3705		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed cis-nonachlor			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-9156-6760		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed cis-nonachlor				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		4E-07	4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error		0.0055052	0.0006882		8						
Total		0.0055056			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-9426-8579		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed cis-nonachlor				6.15%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect		
Error		0.004602		0.0005753		8					
Total		0.0048936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-2448-6474		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed cis-nonachlor				5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-2319-0414		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed cis-nonachlor				4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect		
Error		0.0029764		0.0003721		8					
Total		0.0030664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6505-0598		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed cis-nonachlor				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-4538-9882		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed cis-nonachlor				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-7724-2950		Endpoint: cis-Nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-008 passed cis-nonachlor				6.47%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
cis-Nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
cis-Nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-5435-9965		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed dieldrin			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5152-3038		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed dieldrin			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.73	23.2	0.6098		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5824		Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-9444-9433		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed dieldrin				6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect		
Error		0.004602		0.0005753		8					
Total		0.0048936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-5418-2473		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed dieldrin			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-4283-7085		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed dieldrin			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.11	23.2	0.4875	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5584	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-9494-7725		Endpoint: Dieldrin		CETIS Version: CETISv1.9.3							
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed dieldrin				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-7798-1624		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			59517-007 passed dieldrin			5.06%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-4733-3718		Endpoint: Dieldrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed dieldrin			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
Dieldrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
Dieldrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7835-3313		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed endosulfan i				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-5035-1248		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed endosulfan i				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.73	23.2	0.6098		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5824		Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-1444-8568		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed endosulfan i				6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-3974-0028		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed endosulfan i			5.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-9895-0283		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed endosulfan i				4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect		
Error		0.0029764		0.0003721		8					
Total		0.0030664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-2758-9765		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed endosulfan i				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.94	2.29	0.3039		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect			
Error	0.005258		0.0006573		8						
Total	0.0058509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.6	23.2	0.6583		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.973	0.741	0.9177		Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-6038-3885		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed endosulfan i			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.85	23.2	0.5657		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341		Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-5576-2142		Endpoint: endosulfan I					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed endosulfan i			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.52	23.2	0.6941	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.904	0.741	0.2442	Normal Distribution			
endosulfan I Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
endosulfan I Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-4260-7045		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed endosulfan ii				4.49%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.29	0.1119		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			4.63	23.2	0.1668		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.741	0.4791		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-0125-0536		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-002	Marine Sediment	New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed endosulfan ii				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution				
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-7942-3476		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-003 passed endosulfan ii			6.15%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect		
Error		0.004602		0.0005753		8					
Total		0.0048936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-7312-7619			Endpoint: endosulfan II				CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed endosulfan ii			5.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2001-7781		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed endosulfan ii			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.96	2.29	0.2792		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.11	23.2	0.4875		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.94	0.741	0.5584		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2788-6853		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed endosulfan ii				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-9398-0652		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed endosulfan ii			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.85	23.2	0.5657		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341		Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-9978-0990		Endpoint: endosulfan II					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-008 passed endosulfan ii			6.47%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
endosulfan II Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
endosulfan II Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-4772-1635		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed endrin				4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-9013-8391		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-002 passed endrin			6.73%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		4E-07	4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error		0.0055052	0.0006882		8						
Total		0.0055056			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-3117-4619		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed endrin			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-7266-3558		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed endrin			5.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-9892-3944		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed endrin			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		9.000E-05	9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error		0.0029764	0.0003721		8						
Total		0.0030664			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-7529-7262		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed endrin				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-5968-8083		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed endrin			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.85	23.2	0.5657	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.741	0.9341	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-7383-5567		Endpoint: endrin					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed endrin				6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
endrin Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
endrin Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-9583-6342		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed gamma-bhc (lindane)			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-2995-9218		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed gamma-bhc (lindane)			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error	0.0055052		0.0006882		8						
Total	0.0055056				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.73	23.2	0.6098	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.943	0.741	0.5824	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1467-8639		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed gamma-bhc (lindane)			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.28	23.2	0.8172	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.954	0.741	0.7213	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-7230-9624		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29517-004 passed gamma-bhc (lindane)			5.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-7527-9713		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed gamma-bhc (lindane)			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-6000-2176		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-006	Marine Sediment	New Haven Harbor FNP -2017			Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed gamma-bhc (lindane)			6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect			
Error	0.005258		0.0006573		8						
Total	0.0058509				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.6	23.2	0.6583	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.973	0.741	0.9177	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-3509-9804			Endpoint: gamma-BHC (Lindane)				CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34			Analysis: Parametric-Two Sample				Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed gamma-bhc (lindane)				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution				
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-5619-3579		Endpoint: gamma-BHC (Lindane)					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed gamma-bhc (lindane)			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.52	23.2	0.6941	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.904	0.741	0.2442	Normal Distribution			
gamma-BHC (Lindane) Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
gamma-BHC (Lindane) Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-7446-4166		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed gamma-chlordane (cis)			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
gamma-chlordane		Summary									
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
gamma-chlordane		Detail									
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-9133-3917		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed gamma-chlordane (cis)			6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect		
Error		0.0055052		0.0006882		8					
Total		0.0055056				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-8753-3720		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed gamma-chlordane (cis)			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect		
Error		0.004602		0.0005753		8					
Total		0.0048936				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-8336-5840		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed gamma-chlordane (cis)			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-7185-0974		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed gamma-chlordane (cis)			4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error	0.0029764		0.0003721		8						
Total	0.0030664				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.11	23.2	0.4875	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.94	0.741	0.5584	Normal Distribution			
gamma-chlordane	Summary										
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
gamma-chlordane	Detail										
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-8423-5902		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed gamma-chlordane (cis)				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
gamma-chlordane		Summary									
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
gamma-chlordane		Detail									
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 01-0020-8573		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed gamma-chlordane (cis)			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
gamma-chlordane		Summary									
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
gamma-chlordane		Detail									
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-4545-1797		Endpoint: gamma-chlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed gamma-chlordane (cis)			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect		
Error		0.005092		0.0006365		8					
Total		0.0054284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
gamma-chlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
gamma-chlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-5520-6912		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed heptachlor epoxide			4.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.34	1.86	0.041	8	CDF	0.1082	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1096	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0021904		0.0021904		1	1.8	0.2165	Non-Significant Effect		
Error		0.0097312		0.0012164		8					
Total		0.0119216				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.41	23.2	0.1795	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4412	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.949	0.914	0.973	0.00948	2.24%	-3.23%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-001		0.949	0.914	0.973	0.952	0.945					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-1390-5412		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed heptachlor epoxide				6.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0361	1.86	0.062	8	CDF	0.5140	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.49	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		3.6E-06	3.6E-06		1	0.0013	0.9721	Non-Significant Effect			
Error		0.0220688	0.0027586		8						
Total		0.0220724			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.78	23.2	0.5896	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.941	0.741	0.5590	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	0.13%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-0007-5630		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed heptachlor epoxide			6.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.713	1.86	0.056	8	CDF	0.2479	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.57	2.29	0.9750	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0011664		0.0011664		1	0.509	0.4959	Non-Significant Effect			
Error	0.0183332		0.0022917		8						
Total	0.0194996				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.31	23.2	0.7995	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.957	0.741	0.7534	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-2.36%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-2660-1167		Endpoint: heptachlor epoxide		CETIS Version: CETISv1.9.3							
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-004	Marine Sediment	New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29517-004 passed heptachlor epoxide				5.59%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.341	1.86	0.051	8	CDF	0.6290	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test		1.73		2.29	0.6283		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002209		0.0002209		1	0.116	0.7420	Non-Significant Effect			
Error	0.0152092		0.0019012		8						
Total	0.0154301				9						
Distributional Tests											
Attribute	Test		Test Stat		Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test		1.09		23.2	0.9351		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test		0.93		0.741	0.4508		Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	1.03%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-6858-9696		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed heptachlor epoxide			4.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.476	1.86	0.045	8	CDF	0.3233	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.96	2.29	0.2818	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.227	0.6467	Non-Significant Effect			
Error	0.0118672		0.0014834		8						
Total	0.0122036				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.02	23.2	0.5135	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5165	Normal Distribution				
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-1.26%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-2877-3708		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed heptachlor epoxide				6.58%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.936	1.86	0.060	8	CDF	0.1882	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.95	2.29	0.2870		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0023104		0.0023104		1	0.877	0.3764	Non-Significant Effect			
Error	0.0210772		0.0026347		8						
Total	0.0233876				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.66	23.2	0.6368		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.972	0.741	0.9119		Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-3.32%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-8139-7286		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed heptachlor epoxide			5.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.137	1.86	0.046	8	CDF	0.4471	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.92	2.29	0.3214	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.890E-05		2.890E-05		1	0.0188	0.8943	Non-Significant Effect			
Error	0.0122832		0.0015354		8						
Total	0.0123121				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.82	23.2	0.5747	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.741	0.9293	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-0.37%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2431-2539		Endpoint: heptachlor epoxide					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed heptachlor epoxide			6.46%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.747	1.86	0.059	8	CDF	0.7617	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.78	2.29	0.5236	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0014161		0.0014161		1	0.557	0.4767	Non-Significant Effect		
Error		0.0203248		0.0025406		8					
Total		0.0217409				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.56	23.2	0.6764	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.903	0.741	0.2341	Normal Distribution			
heptachlor epoxide Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	2.60%
heptachlor epoxide Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-4352-6508		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed heptachlor			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect		
Error		0.0024552		0.0003069		8					
Total		0.0029881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 04-4272-7118		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed heptachlor				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4E-07		4E-07		1	0.000581	0.9814	Non-Significant Effect		
Error		0.0055052		0.0006882		8					
Total		0.0055056				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-5880-9172		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed heptachlor			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.28	23.2	0.8172	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-6899-9747		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed heptachlor			5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-6712-2670		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed heptachlor				4.95%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		9.000E-05		9.000E-05		1	0.242	0.6360	Non-Significant Effect		
Error		0.0029764		0.0003721		8					
Total		0.0030664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-1153-0567		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed heptachlor				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect		
Error		0.005258		0.0006573		8					
Total		0.0058509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 13-7268-5645		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			59517-007 passed heptachlor				5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect		
Error		0.0031104		0.0003888		8					
Total		0.0031204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-6690-5374		Endpoint: heptachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed heptachlor			6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution				
heptachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
heptachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 03-6559-1156		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-001 passed hexachlorobenzene				4.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.34	1.86	0.041	8	CDF	0.1082	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1096	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0021904		0.0021904		1	1.8	0.2165	Non-Significant Effect		
Error		0.0097312		0.0012164		8					
Total		0.0119216				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.41	23.2	0.1795	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4412	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.949	0.914	0.973	0.00948	2.24%	-3.23%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-001		0.949	0.914	0.973	0.952	0.945					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 06-9289-8894		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed hexachlorobenzene				6.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0361	1.86	0.062	8	CDF	0.5140	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.49	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		3.6E-06	3.6E-06		1	0.0013	0.9721	Non-Significant Effect			
Error		0.0220688	0.0027586		8						
Total		0.0220724			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.78	23.2	0.5896	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.941	0.741	0.5590	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	0.13%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-6933-7770		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29517-009	Reference sediment	New Haven Harbor FNP -2017		CLDS Reference Site							
29517-003	Marine Sediment	New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed hexachlorobenzene				6.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.713	1.86	0.056	8	CDF	0.2479	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29		0.9750	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0011664		0.0011664		1	0.509	0.4959	Non-Significant Effect			
Error	0.0183332		0.0022917		8						
Total	0.0194996				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test			1.31	23.2		0.7995	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.957	0.741		0.7534	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-2.36%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-2938-4294		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed hexachlorobenzene			5.59%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.341	1.86	0.051	8	CDF	0.6290	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.73	2.29	0.6283	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002209		0.0002209		1	0.116	0.7420	Non-Significant Effect			
Error	0.0152092		0.0019012		8						
Total	0.0154301				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.09	23.2	0.9351	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.93	0.741	0.4508	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	1.03%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 09-6153-1346		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-005	Marine Sediment	New Haven Harbor FNP -2017			Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed hexachlorobenzene			4.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.476	1.86	0.045	8	CDF	0.3233	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.96	2.29	0.2818		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.227	0.6467	Non-Significant Effect			
Error	0.0118672		0.0014834		8						
Total	0.0122036				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.02	23.2	0.5135		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.937	0.741	0.5165		Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-1.26%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-6437-1173		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed hexachlorobenzene				6.58%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.936	1.86	0.060	8	CDF	0.1882	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.95	2.29	0.2870	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0023104		0.0023104		1	0.877	0.3764	Non-Significant Effect			
Error	0.0210772		0.0026347		8						
Total	0.0233876				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.66	23.2	0.6368	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.972	0.741	0.9119	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-3.32%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-1670-1300		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed hexachlorobenzene			5.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.137	1.86	0.046	8	CDF	0.4471	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.92	2.29	0.3214	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.890E-05		2.890E-05		1	0.0188	0.8943	Non-Significant Effect			
Error	0.0122832		0.0015354		8						
Total	0.0123121				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.82	23.2	0.5747	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.741	0.9293	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-0.37%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 18-8407-7674		Endpoint: hexachlorobenzene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed hexachlorobenzene			6.46%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.747	1.86	0.059	8	CDF	0.7617	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.78	2.29	0.5236	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0014161		0.0014161		1	0.557	0.4767	Non-Significant Effect			
Error	0.0203248		0.0025406		8						
Total	0.0217409				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.56	23.2	0.6764	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.903	0.741	0.2341	Normal Distribution			
hexachlorobenzene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	2.60%
hexachlorobenzene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-6103-2240		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed methoxychlor			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.206	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05329		0.05329		1	1.74	0.2241	Non-Significant Effect		
Error		0.24552		0.03069		8					
Total		0.29881				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.63	23.2	0.1668	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4791	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-001		5	4.73	4.6	4.86	4.74	4.57	4.86	0.0467	2.21%	-3.18%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-001		4.74	4.57	4.86	4.76	4.72					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 08-8785-2909		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-002 passed methoxychlor				6.73%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.309	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		4E-05		4E-05		1	0.000581	0.9814	Non-Significant Effect		
Error		0.55052		0.068815		8					
Total		0.55056				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-002		5	4.58	4.21	4.95	4.6	4.21	4.88	0.132	6.45%	0.09%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-002		4.85	4.6	4.21	4.88	4.36					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-2370-7603		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-003 passed methoxychlor				6.15%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.282	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9719		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.02916		0.02916		1	0.507	0.4967	Non-Significant Effect			
Error	0.4602		0.057525		8						
Total	0.48936				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	23.2	0.8172		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.954	0.741	0.7213		Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-003		5	4.69	4.38	5.01	4.79	4.37	4.96	0.114	5.42%	-2.36%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-003		4.48	4.37	4.96	4.79	4.86					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-7588-4389		Endpoint: Methoxychlor		CETIS Version: CETISv1.9.3							
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM	Dredged Sediment Evalu					
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed methoxychlor				5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.258	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.00529		0.00529		1	0.11	0.7484	Non-Significant Effect		
Error		0.3838		0.047975		8					
Total		0.38909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-004		5	4.54	4.27	4.8	4.61	4.29	4.78	0.0954	4.70%	1.00%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-004		4.78	4.29	4.34	4.67	4.61					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-9627-8669		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed methoxychlor				4.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.227	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.009		0.009		1	0.242	0.6360	Non-Significant Effect		
Error		0.29764		0.037205		8					
Total		0.30664				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-005		5	4.64	4.45	4.84	4.65	4.43	4.86	0.0692	3.33%	-1.31%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-005		4.65	4.68	4.6	4.43	4.86					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-0750-9794		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed methoxychlor			6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.302	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.05929		0.05929		1	0.902	0.3700	Non-Significant Effect		
Error		0.5258		0.065725		8					
Total		0.58509				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-006		5	4.74	4.38	5.09	4.88	4.27	4.97	0.127	6.01%	-3.36%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-006		4.27	4.9	4.88	4.67	4.97					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2049-5795		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed methoxychlor			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.232	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.91	2.29	0.3300	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.001		0.001		1	0.0257	0.8766	Non-Significant Effect		
Error		0.31104		0.03888		8					
Total		0.31204				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.85	23.2	0.5657	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.975	0.741	0.9341	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
59517-007		5	4.6	4.4	4.81	4.65	4.33	4.77	0.0739	3.59%	-0.44%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
59517-007		4.77	4.6	4.33	4.65	4.67					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-1492-1370		Endpoint: Methoxychlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed methoxychlor				6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.297	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.77	2.29	0.5415	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.03364		0.03364		1	0.529	0.4880	Non-Significant Effect		
Error		0.5092		0.06365		8					
Total		0.54284				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.52	23.2	0.6941	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.904	0.741	0.2442	Normal Distribution			
Methoxychlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	4.58	4.31	4.86	4.5	4.38	4.94	0.1	4.90%	0.00%
29517-008		5	4.47	4.12	4.81	4.42	4.19	4.89	0.124	6.20%	2.53%
Methoxychlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	4.38	4.66	4.44	4.5	4.94					
29517-008		4.57	4.89	4.19	4.27	4.42					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-5947-0442		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed oxychlordane			4.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.34	1.86	0.041	8	CDF	0.1082	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.16	2.29	0.1096	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0021904		0.0021904		1	1.8	0.2165	Non-Significant Effect		
Error		0.0097312		0.0012164		8					
Total		0.0119216				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.41	23.2	0.1795	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4412	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-001		5	0.947	0.92	0.973	0.949	0.914	0.973	0.00948	2.24%	-3.23%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-001		0.949	0.914	0.973	0.952	0.945					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 02-2613-1593		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-002	Marine Sediment	New Haven Harbor FNP -2017			Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed oxychlordane				6.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0361	1.86	0.062	8	CDF	0.5140	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.49	2.29	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	3.6E-06		3.6E-06		1	0.0013	0.9721	Non-Significant Effect			
Error	0.0220688		0.0027586		8						
Total	0.0220724				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.78	23.2	0.5896		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.941	0.741	0.5590		Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-002		5	0.916	0.842	0.99	0.919	0.842	0.976	0.0266	6.49%	0.13%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-002		0.971	0.919	0.842	0.976	0.871					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-3016-4961		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-003	Marine Sediment		New Haven Harbor FNP -2017		Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-003 passed oxychlordane				6.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.713	1.86	0.056	8	CDF	0.2479	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.57	2.29	0.9750	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0011664		0.0011664		1	0.509	0.4959	Non-Significant Effect		
Error		0.0183332		0.0022917		8					
Total		0.0194996				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.31	23.2	0.7995	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.957	0.741	0.7534	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-003		5	0.939	0.875	1	0.958	0.874	0.992	0.0228	5.43%	-2.36%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-003		0.896	0.874	0.992	0.958	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-1113-7859		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-004	Marine Sediment	New Haven Harbor FNP -2017			Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-004 passed oxychlordane			5.59%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.341	1.86	0.051	8	CDF	0.6290	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.73	2.29	0.6283	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002209		0.0002209		1	0.116	0.7420	Non-Significant Effect			
Error	0.0152092		0.0019012		8						
Total	0.0154301				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.09	23.2	0.9351	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.93	0.741	0.4508	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-004		5	0.908	0.855	0.961	0.922	0.858	0.956	0.0191	4.70%	1.03%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-004		0.956	0.858	0.868	0.934	0.922					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-8729-5708		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-005 passed oxychlordane				4.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.476	1.86	0.045	8	CDF	0.3233	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2818	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0003364		0.0003364		1	0.227	0.6467	Non-Significant Effect		
Error		0.0118672		0.0014834		8					
Total		0.0122036				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.02	23.2	0.5135	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.937	0.741	0.5165	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-005		5	0.929	0.89	0.968	0.929	0.886	0.973	0.014	3.38%	-1.26%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-005		0.929	0.936	0.919	0.886	0.973					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-5319-9524		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-006 passed oxychlordane				6.58%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.936	1.86	0.060	8	CDF	0.1882	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.95	2.29	0.2870	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0023104		0.0023104		1	0.877	0.3764	Non-Significant Effect		
Error		0.0210772		0.0026347		8					
Total		0.0233876				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.66	23.2	0.6368	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.972	0.741	0.9119	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-006		5	0.947	0.876	1.02	0.976	0.853	0.994	0.0256	6.05%	-3.32%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-006		0.853	0.98	0.976	0.934	0.994					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-2353-9255		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed oxychlordane			5.03%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.137	1.86	0.046	8	CDF	0.4471	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.92	2.29	0.3214	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.890E-05		2.890E-05		1	0.0188	0.8943	Non-Significant Effect			
Error	0.0122832		0.0015354		8						
Total	0.0123121				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.82	23.2	0.5747	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.975	0.741	0.9293	Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
59517-007		5	0.92	0.879	0.961	0.929	0.866	0.954	0.0147	3.58%	-0.37%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
59517-007		0.954	0.919	0.866	0.929	0.934					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 21-2476-6861		Endpoint: oxychlordane					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed oxychlordane				6.46%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.747	1.86	0.059	8	CDF	0.7617	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.78	2.29	0.5236		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0014161		0.0014161		1	0.557	0.4767	Non-Significant Effect			
Error	0.0203248		0.0025406		8						
Total	0.0217409				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.56	23.2	0.6764		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.903	0.741	0.2341		Normal Distribution			
oxychlordane Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.917	0.862	0.972	0.901	0.877	0.988	0.0199	4.86%	0.00%
29517-008		5	0.893	0.824	0.962	0.883	0.838	0.978	0.0249	6.23%	2.60%
oxychlordane Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.877	0.931	0.888	0.901	0.988					
29517-008		0.914	0.978	0.838	0.853	0.883					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-6936-2362		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-001	Marine Sediment		New Haven Harbor FNP -2017		Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-001 passed toxaphene				4.50%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.29	1.86	1.04	8	CDF	0.1164	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			2.14	2.29	0.1206	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.296		1.296		1	1.67	0.2327	Non-Significant Effect			
Error	6.22		0.7775		8						
Total	7.516				9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			4.31	23.2	0.1863	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.934	0.741	0.4931	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-001		5	23.7	23.1	24.4	23.8	22.9	24.4	0.242	2.28%	-3.13%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-001		23.8	22.9	24.4	23.9	23.7					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-8612-2120		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-002 passed toxaphene			6.78%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0238	1.86	1.56	8	CDF	0.5092	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.52	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.001		0.001		1	0.000568	0.9816	Non-Significant Effect		
Error		14.088		1.761		8					
Total		14.089				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.79	23.2	0.5863	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.941	0.741	0.5656	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-002		5	23	21.1	24.9	23.1	21.1	24.5	0.672	6.54%	0.09%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-002		24.4	23.1	21.1	24.5	21.9					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-0143-5572		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed toxaphene			6.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.682	1.86	1.42	8	CDF	0.2572	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.57	2.29	0.9921		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.676		0.676		1	0.465	0.5144	Non-Significant Effect			
Error	11.62		1.4525		8						
Total	12.296				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.3	23.2	0.8044		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.955	0.741	0.7300		Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-003		5	23.5	21.9	25.1	24	21.9	24.9	0.573	5.45%	-2.26%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-003		22.5	21.9	24.9	24	24.4					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 19-6317-3383		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed toxaphene				5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.345	1.86	1.29	8	CDF	0.6304	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.71	2.29	0.6523	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.144		0.144		1	0.119	0.7392	Non-Significant Effect		
Error		9.696		1.212		8					
Total		9.84				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.09	23.2	0.9382	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.933	0.741	0.4765	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-004		5	22.8	21.4	24.1	23.2	21.5	24	0.482	4.73%	1.04%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-004		24	21.5	21.8	23.4	23.2					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 14-2654-1881		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-005 passed toxaphene			4.96%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.456	1.86	1.14	8	CDF	0.3303	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.2951	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.196		0.196		1	0.208	0.6607	Non-Significant Effect		
Error		7.548		0.943499		8					
Total		7.744				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.02	23.2	0.5129	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.944	0.741	0.6009	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-005		5	23.3	22.3	24.3	23.3	22.2	24.4	0.354	3.39%	-1.22%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-005		23.3	23.5	23.1	22.2	24.4					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 00-2097-7125		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-006 passed toxaphene			6.65%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.924	1.86	1.53	8	CDF	0.1913	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.94	2.29	0.2986	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		1.444		1.444		1	0.853	0.3826	Non-Significant Effect		
Error		13.536		1.692		8					
Total		14.98				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.68	23.2	0.6270	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.97	0.741	0.8937	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-006		5	23.8	22	25.6	24.5	21.4	25	0.651	6.13%	-3.30%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-006		21.4	24.6	24.5	23.4	25					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 20-8723-0427		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
59517-007	Marine Sediment		New Haven Harbor FNP -2017		Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				59517-007 passed toxaphene				5.00%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.161	1.86	1.15	8	CDF	0.4379	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.93	2.29	0.3145	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.025		0.025		1	0.0261	0.8758	Non-Significant Effect		
Error		7.676		0.9595		8					
Total		7.701				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.92	23.2	0.5428	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.973	0.741	0.9196	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
59517-007		5	23.1	22.1	24.1	23.3	21.8	24	0.362	3.51%	-0.43%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
59517-007		24	23.1	21.8	23.3	23.4					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6493-6900		Endpoint: toxaphene					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-008	Marine Sediment		New Haven Harbor FNP -2017		Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-008 passed toxaphene			6.55%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.74	1.86	1.51	8	CDF	0.7599	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.8	2.29	0.4900	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.899999		0.899999		1	0.548	0.4803	Non-Significant Effect		
Error		13.136		1.642		8					
Total		14.036				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.6	23.2	0.6591	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.907	0.741	0.2589	Normal Distribution			
toxaphene Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	23	21.6	24.4	22.6	22	24.8	0.502	4.88%	0.00%
29517-008		5	22.4	20.7	24.2	22.2	21	24.6	0.636	6.34%	2.61%
toxaphene Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	22	23.4	22.3	22.6	24.8					
29517-008		22.9	24.6	21	21.4	22.2					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 10-7993-7853		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-001	16-8840-0129	21 Aug-17 08:40	21 Aug-17 08:40	9d 15h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-001	Marine Sediment	New Haven Harbor FNP -2017			Composite 1 (Sta C)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-001 passed trans-nonachlor			4.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-001	1.32	1.86	0.021	8	CDF	0.1120	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				2.16	2.29	0.1119	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005329		0.0005329		1	1.74	0.2241	Non-Significant Effect			
Error	0.0024552		0.0003069		8						
Total	0.0029881				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				4.63	23.2	0.1668	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.933	0.741	0.4791	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-001		5	0.473	0.46	0.486	0.474	0.457	0.486	0.00467	2.21%	-3.18%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-001		0.474	0.457	0.486	0.476	0.472					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 16-2286-4093		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:33		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-002	17-4180-1357	21 Aug-17 09:50	21 Aug-17 09:50	9d 14h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-002	Marine Sediment		New Haven Harbor FNP -2017		Composite 2 (Sta D,E,F)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-002 passed trans-nonachlor				6.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-002	-0.0241	1.86	0.031	8	CDF	0.5093	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		4E-07	4E-07		1	0.000581	0.9814	Non-Significant Effect			
Error		0.0055052	0.0006882		8						
Total		0.0055056			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.73	23.2	0.6098	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.943	0.741	0.5824	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-002		5	0.458	0.421	0.495	0.46	0.421	0.488	0.0132	6.45%	0.09%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-002		0.485	0.46	0.421	0.488	0.436					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 11-4507-4212		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-003	21-0035-0662	21 Aug-17 14:00	21 Aug-17 14:00	9d 10h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-003	Marine Sediment	New Haven Harbor FNP -2017			Composite 3 (Sta G,H,I)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				29517-003 passed trans-nonachlor			6.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-003	0.712	1.86	0.028	8	CDF	0.2484	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test				1.57	2.29	0.9719	No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0002916		0.0002916		1	0.507	0.4967	Non-Significant Effect			
Error	0.004602		0.0005753		8						
Total	0.0048936				9						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				1.28	23.2	0.8172	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.954	0.741	0.7213	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-003		5	0.469	0.438	0.501	0.479	0.437	0.496	0.0114	5.42%	-2.36%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-003		0.448	0.437	0.496	0.479	0.486					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 07-8926-3049		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-004	00-1332-0723	21 Aug-17 14:45	21 Aug-17 14:45	9d 9h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-004	Marine Sediment		New Haven Harbor FNP -2017		Composite 4 (Sta J,K,L)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-004 passed trans-nonachlor				5.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-004	-0.332	1.86	0.026	8	CDF	0.6258	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.72	2.29	0.6346	No Outliers Detected			
ANOVA Table											
Source		Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)		
Between		0.0000529		0.0000529		1	0.11	0.7484	Non-Significant Effect		
Error		0.003838		0.0004798		8					
Total		0.0038909				9					
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			1.11	23.2	0.9217	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.929	0.741	0.4420	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-004		5	0.454	0.427	0.48	0.461	0.429	0.478	0.00954	4.70%	1.00%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-004		0.478	0.429	0.434	0.467	0.461					

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Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 05-1517-9197		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-005	02-6439-2385	21 Aug-17 15:30	21 Aug-17 15:30	9d 8h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-005	Marine Sediment		New Haven Harbor FNP -2017		Composite 5 (Sta M,N,O)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-005 passed trans-nonachlor				4.95%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-005	0.492	1.86	0.023	8	CDF	0.3180	Non-Significant Effect		
Auxiliary Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:5%)			
Extreme Value		Grubbs Extreme Value Test			1.96	2.29	0.2792	No Outliers Detected			
ANOVA Table											
Source		Sum Squares	Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between		9.000E-05	9.000E-05		1	0.242	0.6360	Non-Significant Effect			
Error		0.0029764	0.0003721		8						
Total		0.0030664			9						
Distributional Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances		Variance Ratio F Test			2.11	23.2	0.4875	Equal Variances			
Distribution		Shapiro-Wilk W Normality Test			0.94	0.741	0.5584	Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-005		5	0.464	0.445	0.484	0.465	0.443	0.486	0.00692	3.33%	-1.31%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-005		0.465	0.468	0.46	0.443	0.486					

CETIS Analytical Report

Report Date: 29 Nov-17 10:34 (p 150 of 152)
 Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 12-2688-9639		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-006	11-1627-5877	21 Aug-17 12:05	21 Aug-17 12:05	9d 12h							
Sample Code	Material Type		Sample Source		Station Location		Lat/Long				
29517-009	Reference sediment		New Haven Harbor FNP -2017		CLDS Reference Site						
29517-006	Marine Sediment		New Haven Harbor FNP -2017		Composite 6 (Sta P,Q,R,S)						
Data Transform		Alt Hyp				Comparison Result				PMSD	
Untransformed		C < T				29517-006 passed trans-nonachlor				6.58%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-006	0.95	1.86	0.030	8	CDF	0.1850	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.94	2.29	0.3039	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0005929		0.0005929		1	0.902	0.3700	Non-Significant Effect			
Error	0.005258		0.0006573		8						
Total	0.0058509				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.6	23.2	0.6583	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.741	0.9177	Normal Distribution				
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-006		5	0.474	0.438	0.509	0.488	0.427	0.497	0.0127	6.01%	-3.36%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-006		0.427	0.49	0.488	0.467	0.497					

CETIS Analytical Report

Report Date: 29 Nov-17 10:34 (p 151 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

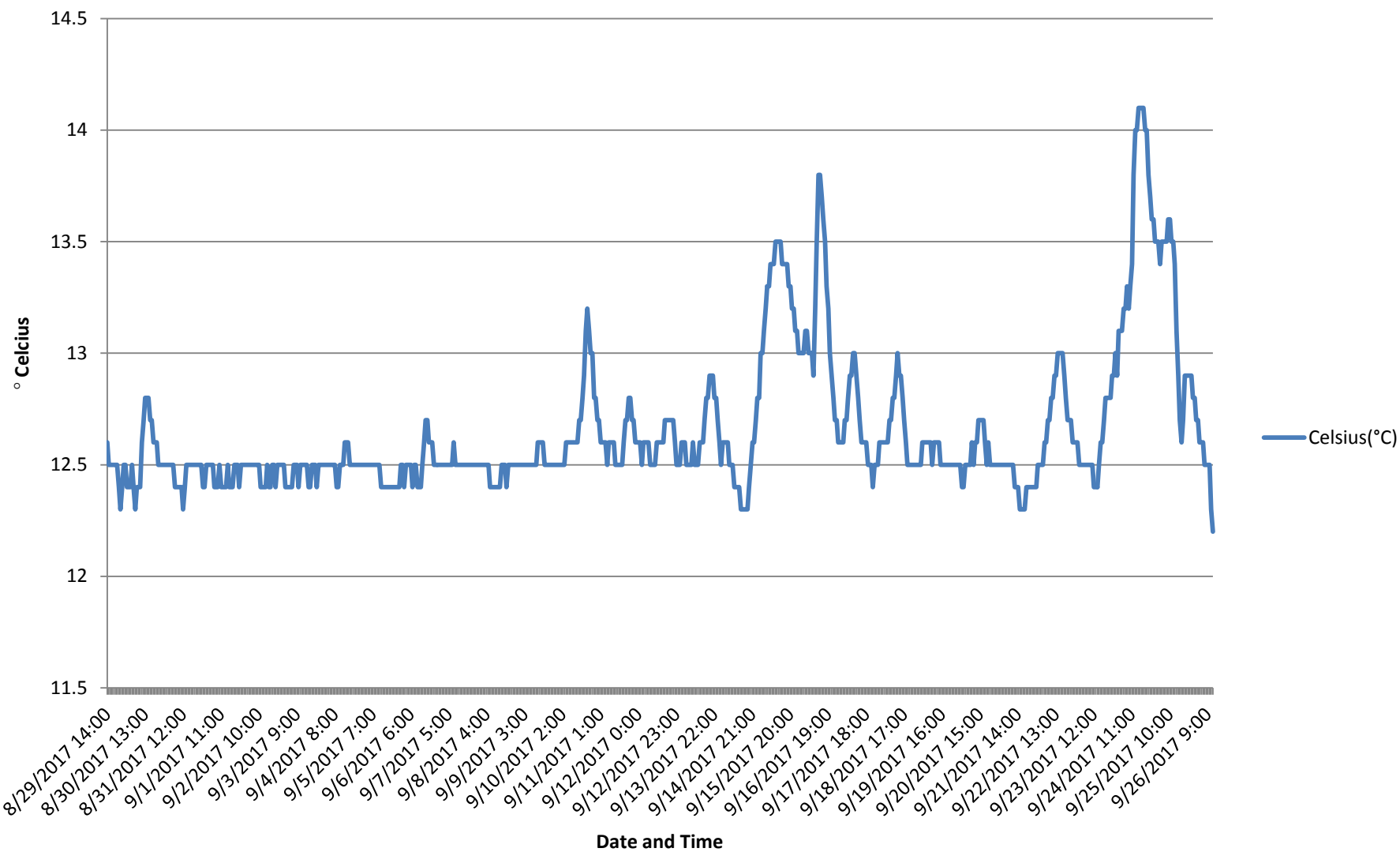
Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 17-8056-6285		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:34		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
59517-007	11-8750-3546	21 Aug-17 15:40	21 Aug-17 15:40	9d 8h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
59517-007	Marine Sediment	New Haven Harbor FNP -2017			Composite 7 (Sta T,U,V,W)						
Data Transform		Alt Hyp				Comparison Result			PMSD		
Untransformed		C < T				59517-007 passed trans-nonachlor			5.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		59517-007	0.16	1.86	0.023	8	CDF	0.4383	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.29	0.3300		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	1.000E-05		1.000E-05		1	0.0257	0.8766	Non-Significant Effect			
Error	0.0031104		0.0003888		8						
Total	0.0031204				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.85	23.2	0.5657		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.975	0.741	0.9341		Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
59517-007		5	0.46	0.44	0.481	0.465	0.433	0.477	0.00739	3.59%	-0.44%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
59517-007		0.477	0.46	0.433	0.465	0.467					

CETIS Analytical Report

Report Date: 29 Nov-17 10:34 (p 152 of 152)
Test Code: 29525Nv-Pest | 03-6397-7041

Bioaccumulation Evaluation - Pesticides - Nereis										EnviroSystems, Inc.	
Analysis ID: 15-6169-3885		Endpoint: trans-nonachlor					CETIS Version: CETISv1.9.3				
Analyzed: 29 Nov-17 9:35		Analysis: Parametric-Two Sample					Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name		Project				
29517-009	02-4760-4063	17 Aug-17 08:00	18 Aug-17 13:00	13d 16h	AECOM		Dredged Sediment Evalu				
29517-008	15-5652-0661	21 Aug-17 11:30	21 Aug-17 11:30	9d 13h							
Sample Code	Material Type	Sample Source			Station Location		Lat/Long				
29517-009	Reference sediment	New Haven Harbor FNP -2017			CLDS Reference Site						
29517-008	Marine Sediment	New Haven Harbor FNP -2017			Composite 8 (Sta X,Y,Z)						
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29517-008 passed trans-nonachlor				6.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Reference Sed		29517-008	-0.727	1.86	0.03	8	CDF	0.7560	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5415		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0003364		0.0003364		1	0.529	0.4880	Non-Significant Effect			
Error	0.005092		0.0006365		8						
Total	0.0054284				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.52	23.2	0.6941		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.904	0.741	0.2442		Normal Distribution			
trans-nonachlor Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29517-009	RS	5	0.458	0.431	0.486	0.45	0.438	0.494	0.01	4.90%	0.00%
29517-008		5	0.447	0.412	0.481	0.442	0.419	0.489	0.0124	6.20%	2.53%
trans-nonachlor Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29517-009	RS	0.438	0.466	0.444	0.45	0.494					
29517-008		0.457	0.489	0.419	0.427	0.442					

29524 and 29525 - New Haven Harbor FNP **28 day *M. nasuta* and *N. virens* Survival and Bioaccumulation Evaluation** **Hourly Temperature Data**



STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
1	8/29/2017 14:00	12.6
2	8/29/2017 15:00	12.5
3	8/29/2017 16:00	12.5
4	8/29/2017 17:00	12.5
5	8/29/2017 18:00	12.5
6	8/29/2017 19:00	12.5
7	8/29/2017 20:00	12.5
8	8/29/2017 21:00	12.4
9	8/29/2017 22:00	12.3
10	8/29/2017 23:00	12.4
11	8/30/2017 0:00	12.5
12	8/30/2017 1:00	12.5
13	8/30/2017 2:00	12.4
14	8/30/2017 3:00	12.4
15	8/30/2017 4:00	12.4
16	8/30/2017 5:00	12.5
17	8/30/2017 6:00	12.4
18	8/30/2017 7:00	12.3
19	8/30/2017 8:00	12.4
20	8/30/2017 9:00	12.4
21	8/30/2017 10:00	12.4
22	8/30/2017 11:00	12.6
23	8/30/2017 12:00	12.7
24	8/30/2017 13:00	12.8
25	8/30/2017 14:00	12.8
26	8/30/2017 15:00	12.8
27	8/30/2017 16:00	12.7
28	8/30/2017 17:00	12.7
29	8/30/2017 18:00	12.6
30	8/30/2017 19:00	12.6
31	8/30/2017 20:00	12.6
32	8/30/2017 21:00	12.5
33	8/30/2017 22:00	12.5
34	8/30/2017 23:00	12.5
35	8/31/2017 0:00	12.5
36	8/31/2017 1:00	12.5
37	8/31/2017 2:00	12.5
38	8/31/2017 3:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
39	8/31/2017 4:00	12.5
40	8/31/2017 5:00	12.5
41	8/31/2017 6:00	12.5
42	8/31/2017 7:00	12.4
43	8/31/2017 8:00	12.4
44	8/31/2017 9:00	12.4
45	8/31/2017 10:00	12.4
46	8/31/2017 11:00	12.4
47	8/31/2017 12:00	12.3
48	8/31/2017 13:00	12.4
49	8/31/2017 14:00	12.5
50	8/31/2017 15:00	12.5
51	8/31/2017 16:00	12.5
52	8/31/2017 17:00	12.5
53	8/31/2017 18:00	12.5
54	8/31/2017 19:00	12.5
55	8/31/2017 20:00	12.5
56	8/31/2017 21:00	12.5
57	8/31/2017 22:00	12.5
58	8/31/2017 23:00	12.5
59	9/1/2017 0:00	12.4
60	9/1/2017 1:00	12.4
61	9/1/2017 2:00	12.5
62	9/1/2017 3:00	12.5
63	9/1/2017 4:00	12.5
64	9/1/2017 5:00	12.5
65	9/1/2017 6:00	12.5
66	9/1/2017 7:00	12.4
67	9/1/2017 8:00	12.4
68	9/1/2017 9:00	12.4
69	9/1/2017 10:00	12.5
70	9/1/2017 11:00	12.4
71	9/1/2017 12:00	12.4
72	9/1/2017 13:00	12.4
73	9/1/2017 14:00	12.4
74	9/1/2017 15:00	12.5
75	9/1/2017 16:00	12.4
76	9/1/2017 17:00	12.4

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
77	9/1/2017 18:00	12.4
78	9/1/2017 19:00	12.5
79	9/1/2017 20:00	12.5
80	9/1/2017 21:00	12.5
81	9/1/2017 22:00	12.4
82	9/1/2017 23:00	12.5
83	9/2/2017 0:00	12.5
84	9/2/2017 1:00	12.5
85	9/2/2017 2:00	12.5
86	9/2/2017 3:00	12.5
87	9/2/2017 4:00	12.5
88	9/2/2017 5:00	12.5
89	9/2/2017 6:00	12.5
90	9/2/2017 7:00	12.5
91	9/2/2017 8:00	12.5
92	9/2/2017 9:00	12.5
93	9/2/2017 10:00	12.5
94	9/2/2017 11:00	12.4
95	9/2/2017 12:00	12.4
96	9/2/2017 13:00	12.4
97	9/2/2017 14:00	12.4
98	9/2/2017 15:00	12.5
99	9/2/2017 16:00	12.4
100	9/2/2017 17:00	12.4
101	9/2/2017 18:00	12.5
102	9/2/2017 19:00	12.5
103	9/2/2017 20:00	12.4
104	9/2/2017 21:00	12.5
105	9/2/2017 22:00	12.5
106	9/2/2017 23:00	12.5
107	9/3/2017 0:00	12.5
108	9/3/2017 1:00	12.5
109	9/3/2017 2:00	12.4
110	9/3/2017 3:00	12.4
111	9/3/2017 4:00	12.4
112	9/3/2017 5:00	12.4
113	9/3/2017 6:00	12.4
114	9/3/2017 7:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
115	9/3/2017 8:00	12.5
116	9/3/2017 9:00	12.5
117	9/3/2017 10:00	12.4
118	9/3/2017 11:00	12.5
119	9/3/2017 12:00	12.5
120	9/3/2017 13:00	12.5
121	9/3/2017 14:00	12.5
122	9/3/2017 15:00	12.5
123	9/3/2017 16:00	12.4
124	9/3/2017 17:00	12.4
125	9/3/2017 18:00	12.5
126	9/3/2017 19:00	12.5
127	9/3/2017 20:00	12.5
128	9/3/2017 21:00	12.4
129	9/3/2017 22:00	12.5
130	9/3/2017 23:00	12.5
131	9/4/2017 0:00	12.5
132	9/4/2017 1:00	12.5
133	9/4/2017 2:00	12.5
134	9/4/2017 3:00	12.5
135	9/4/2017 4:00	12.5
136	9/4/2017 5:00	12.5
137	9/4/2017 6:00	12.5
138	9/4/2017 7:00	12.5
139	9/4/2017 8:00	12.5
140	9/4/2017 9:00	12.4
141	9/4/2017 10:00	12.4
142	9/4/2017 11:00	12.5
143	9/4/2017 12:00	12.5
144	9/4/2017 13:00	12.5
145	9/4/2017 14:00	12.6
146	9/4/2017 15:00	12.6
147	9/4/2017 16:00	12.6
148	9/4/2017 17:00	12.5
149	9/4/2017 18:00	12.5
150	9/4/2017 19:00	12.5
151	9/4/2017 20:00	12.5
152	9/4/2017 21:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
153	9/4/2017 22:00	12.5
154	9/4/2017 23:00	12.5
155	9/5/2017 0:00	12.5
156	9/5/2017 1:00	12.5
157	9/5/2017 2:00	12.5
158	9/5/2017 3:00	12.5
159	9/5/2017 4:00	12.5
160	9/5/2017 5:00	12.5
161	9/5/2017 6:00	12.5
162	9/5/2017 7:00	12.5
163	9/5/2017 8:00	12.5
164	9/5/2017 9:00	12.5
165	9/5/2017 10:00	12.5
166	9/5/2017 11:00	12.5
167	9/5/2017 12:00	12.4
168	9/5/2017 13:00	12.4
169	9/5/2017 14:00	12.4
170	9/5/2017 15:00	12.4
171	9/5/2017 16:00	12.4
172	9/5/2017 17:00	12.4
173	9/5/2017 18:00	12.4
174	9/5/2017 19:00	12.4
175	9/5/2017 20:00	12.4
176	9/5/2017 21:00	12.4
177	9/5/2017 22:00	12.4
178	9/5/2017 23:00	12.4
179	9/6/2017 0:00	12.5
180	9/6/2017 1:00	12.5
181	9/6/2017 2:00	12.4
182	9/6/2017 3:00	12.5
183	9/6/2017 4:00	12.5
184	9/6/2017 5:00	12.5
185	9/6/2017 6:00	12.5
186	9/6/2017 7:00	12.4
187	9/6/2017 8:00	12.5
188	9/6/2017 9:00	12.5
189	9/6/2017 10:00	12.4
190	9/6/2017 11:00	12.4

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
191	9/6/2017 12:00	12.4
192	9/6/2017 13:00	12.5
193	9/6/2017 14:00	12.6
194	9/6/2017 15:00	12.7
195	9/6/2017 16:00	12.7
196	9/6/2017 17:00	12.6
197	9/6/2017 18:00	12.6
198	9/6/2017 19:00	12.6
199	9/6/2017 20:00	12.5
200	9/6/2017 21:00	12.5
201	9/6/2017 22:00	12.5
202	9/6/2017 23:00	12.5
203	9/7/2017 0:00	12.5
204	9/7/2017 1:00	12.5
205	9/7/2017 2:00	12.5
206	9/7/2017 3:00	12.5
207	9/7/2017 4:00	12.5
208	9/7/2017 5:00	12.5
209	9/7/2017 6:00	12.5
210	9/7/2017 7:00	12.5
211	9/7/2017 8:00	12.6
212	9/7/2017 9:00	12.5
213	9/7/2017 10:00	12.5
214	9/7/2017 11:00	12.5
215	9/7/2017 12:00	12.5
216	9/7/2017 13:00	12.5
217	9/7/2017 14:00	12.5
218	9/7/2017 15:00	12.5
219	9/7/2017 16:00	12.5
220	9/7/2017 17:00	12.5
221	9/7/2017 18:00	12.5
222	9/7/2017 19:00	12.5
223	9/7/2017 20:00	12.5
224	9/7/2017 21:00	12.5
225	9/7/2017 22:00	12.5
226	9/7/2017 23:00	12.5
227	9/8/2017 0:00	12.5
228	9/8/2017 1:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
229	9/8/2017 2:00	12.5
230	9/8/2017 3:00	12.5
231	9/8/2017 4:00	12.5
232	9/8/2017 5:00	12.5
233	9/8/2017 6:00	12.4
234	9/8/2017 7:00	12.4
235	9/8/2017 8:00	12.4
236	9/8/2017 9:00	12.4
237	9/8/2017 10:00	12.4
238	9/8/2017 11:00	12.4
239	9/8/2017 12:00	12.4
240	9/8/2017 13:00	12.5
241	9/8/2017 14:00	12.5
242	9/8/2017 15:00	12.5
243	9/8/2017 16:00	12.4
244	9/8/2017 17:00	12.5
245	9/8/2017 18:00	12.5
246	9/8/2017 19:00	12.5
247	9/8/2017 20:00	12.5
248	9/8/2017 21:00	12.5
249	9/8/2017 22:00	12.5
250	9/8/2017 23:00	12.5
251	9/9/2017 0:00	12.5
252	9/9/2017 1:00	12.5
253	9/9/2017 2:00	12.5
254	9/9/2017 3:00	12.5
255	9/9/2017 4:00	12.5
256	9/9/2017 5:00	12.5
257	9/9/2017 6:00	12.5
258	9/9/2017 7:00	12.5
259	9/9/2017 8:00	12.5
260	9/9/2017 9:00	12.5
261	9/9/2017 10:00	12.5
262	9/9/2017 11:00	12.6
263	9/9/2017 12:00	12.6
264	9/9/2017 13:00	12.6
265	9/9/2017 14:00	12.6
266	9/9/2017 15:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
267	9/9/2017 16:00	12.5
268	9/9/2017 17:00	12.5
269	9/9/2017 18:00	12.5
270	9/9/2017 19:00	12.5
271	9/9/2017 20:00	12.5
272	9/9/2017 21:00	12.5
273	9/9/2017 22:00	12.5
274	9/9/2017 23:00	12.5
275	9/10/2017 0:00	12.5
276	9/10/2017 1:00	12.5
277	9/10/2017 2:00	12.5
278	9/10/2017 3:00	12.5
279	9/10/2017 4:00	12.6
280	9/10/2017 5:00	12.6
281	9/10/2017 6:00	12.6
282	9/10/2017 7:00	12.6
283	9/10/2017 8:00	12.6
284	9/10/2017 9:00	12.6
285	9/10/2017 10:00	12.6
286	9/10/2017 11:00	12.6
287	9/10/2017 12:00	12.7
288	9/10/2017 13:00	12.7
289	9/10/2017 14:00	12.8
290	9/10/2017 15:00	12.9
291	9/10/2017 16:00	13.1
292	9/10/2017 17:00	13.2
293	9/10/2017 18:00	13.1
294	9/10/2017 19:00	13
295	9/10/2017 20:00	13
296	9/10/2017 21:00	12.8
297	9/10/2017 22:00	12.8
298	9/10/2017 23:00	12.7
299	9/11/2017 0:00	12.7
300	9/11/2017 1:00	12.6
301	9/11/2017 2:00	12.6
302	9/11/2017 3:00	12.6
303	9/11/2017 4:00	12.6
304	9/11/2017 5:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
305	9/11/2017 6:00	12.6
306	9/11/2017 7:00	12.6
307	9/11/2017 8:00	12.6
308	9/11/2017 9:00	12.6
309	9/11/2017 10:00	12.5
310	9/11/2017 11:00	12.5
311	9/11/2017 12:00	12.5
312	9/11/2017 13:00	12.5
313	9/11/2017 14:00	12.5
314	9/11/2017 15:00	12.6
315	9/11/2017 16:00	12.7
316	9/11/2017 17:00	12.7
317	9/11/2017 18:00	12.8
318	9/11/2017 19:00	12.8
319	9/11/2017 20:00	12.7
320	9/11/2017 21:00	12.7
321	9/11/2017 22:00	12.6
322	9/11/2017 23:00	12.6
323	9/12/2017 0:00	12.6
324	9/12/2017 1:00	12.6
325	9/12/2017 2:00	12.5
326	9/12/2017 3:00	12.6
327	9/12/2017 4:00	12.6
328	9/12/2017 5:00	12.6
329	9/12/2017 6:00	12.6
330	9/12/2017 7:00	12.5
331	9/12/2017 8:00	12.5
332	9/12/2017 9:00	12.5
333	9/12/2017 10:00	12.5
334	9/12/2017 11:00	12.6
335	9/12/2017 12:00	12.6
336	9/12/2017 13:00	12.6
337	9/12/2017 14:00	12.6
338	9/12/2017 15:00	12.6
339	9/12/2017 16:00	12.7
340	9/12/2017 17:00	12.7
341	9/12/2017 18:00	12.7
342	9/12/2017 19:00	12.7

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
343	9/12/2017 20:00	12.7
344	9/12/2017 21:00	12.7
345	9/12/2017 22:00	12.6
346	9/12/2017 23:00	12.5
347	9/13/2017 0:00	12.5
348	9/13/2017 1:00	12.5
349	9/13/2017 2:00	12.6
350	9/13/2017 3:00	12.6
351	9/13/2017 4:00	12.6
352	9/13/2017 5:00	12.5
353	9/13/2017 6:00	12.5
354	9/13/2017 7:00	12.5
355	9/13/2017 8:00	12.5
356	9/13/2017 9:00	12.6
357	9/13/2017 10:00	12.5
358	9/13/2017 11:00	12.5
359	9/13/2017 12:00	12.5
360	9/13/2017 13:00	12.6
361	9/13/2017 14:00	12.6
362	9/13/2017 15:00	12.6
363	9/13/2017 16:00	12.7
364	9/13/2017 17:00	12.8
365	9/13/2017 18:00	12.8
366	9/13/2017 19:00	12.9
367	9/13/2017 20:00	12.9
368	9/13/2017 21:00	12.9
369	9/13/2017 22:00	12.8
370	9/13/2017 23:00	12.8
371	9/14/2017 0:00	12.7
372	9/14/2017 1:00	12.6
373	9/14/2017 2:00	12.5
374	9/14/2017 3:00	12.6
375	9/14/2017 4:00	12.6
376	9/14/2017 5:00	12.6
377	9/14/2017 6:00	12.6
378	9/14/2017 7:00	12.5
379	9/14/2017 8:00	12.5
380	9/14/2017 9:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
381	9/14/2017 10:00	12.4
382	9/14/2017 11:00	12.4
383	9/14/2017 12:00	12.4
384	9/14/2017 13:00	12.4
385	9/14/2017 14:00	12.3
386	9/14/2017 15:00	12.3
387	9/14/2017 16:00	12.3
388	9/14/2017 17:00	12.3
389	9/14/2017 18:00	12.3
390	9/14/2017 19:00	12.4
391	9/14/2017 20:00	12.5
392	9/14/2017 21:00	12.6
393	9/14/2017 22:00	12.6
394	9/14/2017 23:00	12.7
395	9/15/2017 0:00	12.8
396	9/15/2017 1:00	12.8
397	9/15/2017 2:00	13
398	9/15/2017 3:00	13
399	9/15/2017 4:00	13.1
400	9/15/2017 5:00	13.2
401	9/15/2017 6:00	13.3
402	9/15/2017 7:00	13.3
403	9/15/2017 8:00	13.4
404	9/15/2017 9:00	13.4
405	9/15/2017 10:00	13.4
406	9/15/2017 11:00	13.5
407	9/15/2017 12:00	13.5
408	9/15/2017 13:00	13.5
409	9/15/2017 14:00	13.5
410	9/15/2017 15:00	13.4
411	9/15/2017 16:00	13.4
412	9/15/2017 17:00	13.4
413	9/15/2017 18:00	13.4
414	9/15/2017 19:00	13.3
415	9/15/2017 20:00	13.3
416	9/15/2017 21:00	13.2
417	9/15/2017 22:00	13.2
418	9/15/2017 23:00	13.1

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
419	9/16/2017 0:00	13.1
420	9/16/2017 1:00	13
421	9/16/2017 2:00	13
422	9/16/2017 3:00	13
423	9/16/2017 4:00	13
424	9/16/2017 5:00	13.1
425	9/16/2017 6:00	13.1
426	9/16/2017 7:00	13
427	9/16/2017 8:00	13
428	9/16/2017 9:00	13
429	9/16/2017 10:00	12.9
430	9/16/2017 11:00	13.2
431	9/16/2017 12:00	13.5
432	9/16/2017 13:00	13.8
433	9/16/2017 14:00	13.8
434	9/16/2017 15:00	13.7
435	9/16/2017 16:00	13.6
436	9/16/2017 17:00	13.5
437	9/16/2017 18:00	13.3
438	9/16/2017 19:00	13.2
439	9/16/2017 20:00	13
440	9/16/2017 21:00	12.9
441	9/16/2017 22:00	12.8
442	9/16/2017 23:00	12.7
443	9/17/2017 0:00	12.7
444	9/17/2017 1:00	12.6
445	9/17/2017 2:00	12.6
446	9/17/2017 3:00	12.6
447	9/17/2017 4:00	12.6
448	9/17/2017 5:00	12.7
449	9/17/2017 6:00	12.7
450	9/17/2017 7:00	12.8
451	9/17/2017 8:00	12.9
452	9/17/2017 9:00	12.9
453	9/17/2017 10:00	13
454	9/17/2017 11:00	13
455	9/17/2017 12:00	12.9
456	9/17/2017 13:00	12.8

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
457	9/17/2017 14:00	12.7
458	9/17/2017 15:00	12.6
459	9/17/2017 16:00	12.6
460	9/17/2017 17:00	12.6
461	9/17/2017 18:00	12.6
462	9/17/2017 19:00	12.5
463	9/17/2017 20:00	12.5
464	9/17/2017 21:00	12.5
465	9/17/2017 22:00	12.4
466	9/17/2017 23:00	12.5
467	9/18/2017 0:00	12.5
468	9/18/2017 1:00	12.5
469	9/18/2017 2:00	12.6
470	9/18/2017 3:00	12.6
471	9/18/2017 4:00	12.6
472	9/18/2017 5:00	12.6
473	9/18/2017 6:00	12.6
474	9/18/2017 7:00	12.6
475	9/18/2017 8:00	12.7
476	9/18/2017 9:00	12.7
477	9/18/2017 10:00	12.8
478	9/18/2017 11:00	12.8
479	9/18/2017 12:00	12.9
480	9/18/2017 13:00	13
481	9/18/2017 14:00	12.9
482	9/18/2017 15:00	12.9
483	9/18/2017 16:00	12.8
484	9/18/2017 17:00	12.7
485	9/18/2017 18:00	12.6
486	9/18/2017 19:00	12.5
487	9/18/2017 20:00	12.5
488	9/18/2017 21:00	12.5
489	9/18/2017 22:00	12.5
490	9/18/2017 23:00	12.5
491	9/19/2017 0:00	12.5
492	9/19/2017 1:00	12.5
493	9/19/2017 2:00	12.5
494	9/19/2017 3:00	12.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
495	9/19/2017 4:00	12.6
496	9/19/2017 5:00	12.6
497	9/19/2017 6:00	12.6
498	9/19/2017 7:00	12.6
499	9/19/2017 8:00	12.6
500	9/19/2017 9:00	12.6
501	9/19/2017 10:00	12.5
502	9/19/2017 11:00	12.6
503	9/19/2017 12:00	12.6
504	9/19/2017 13:00	12.6
505	9/19/2017 14:00	12.6
506	9/19/2017 15:00	12.5
507	9/19/2017 16:00	12.5
508	9/19/2017 17:00	12.5
509	9/19/2017 18:00	12.5
510	9/19/2017 19:00	12.5
511	9/19/2017 20:00	12.5
512	9/19/2017 21:00	12.5
513	9/19/2017 22:00	12.5
514	9/19/2017 23:00	12.5
515	9/20/2017 0:00	12.5
516	9/20/2017 1:00	12.5
517	9/20/2017 2:00	12.5
518	9/20/2017 3:00	12.5
519	9/20/2017 4:00	12.4
520	9/20/2017 5:00	12.4
521	9/20/2017 6:00	12.5
522	9/20/2017 7:00	12.5
523	9/20/2017 8:00	12.5
524	9/20/2017 9:00	12.5
525	9/20/2017 10:00	12.6
526	9/20/2017 11:00	12.5
527	9/20/2017 12:00	12.6
528	9/20/2017 13:00	12.6
529	9/20/2017 14:00	12.7
530	9/20/2017 15:00	12.7
531	9/20/2017 16:00	12.7
532	9/20/2017 17:00	12.7

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
533	9/20/2017 18:00	12.6
534	9/20/2017 19:00	12.5
535	9/20/2017 20:00	12.6
536	9/20/2017 21:00	12.5
537	9/20/2017 22:00	12.5
538	9/20/2017 23:00	12.5
539	9/21/2017 0:00	12.5
540	9/21/2017 1:00	12.5
541	9/21/2017 2:00	12.5
542	9/21/2017 3:00	12.5
543	9/21/2017 4:00	12.5
544	9/21/2017 5:00	12.5
545	9/21/2017 6:00	12.5
546	9/21/2017 7:00	12.5
547	9/21/2017 8:00	12.5
548	9/21/2017 9:00	12.5
549	9/21/2017 10:00	12.5
550	9/21/2017 11:00	12.5
551	9/21/2017 12:00	12.4
552	9/21/2017 13:00	12.4
553	9/21/2017 14:00	12.4
554	9/21/2017 15:00	12.3
555	9/21/2017 16:00	12.3
556	9/21/2017 17:00	12.3
557	9/21/2017 18:00	12.3
558	9/21/2017 19:00	12.4
559	9/21/2017 20:00	12.4
560	9/21/2017 21:00	12.4
561	9/21/2017 22:00	12.4
562	9/21/2017 23:00	12.4
563	9/22/2017 0:00	12.4
564	9/22/2017 1:00	12.4
565	9/22/2017 2:00	12.5
566	9/22/2017 3:00	12.5
567	9/22/2017 4:00	12.5
568	9/22/2017 5:00	12.5
569	9/22/2017 6:00	12.6
570	9/22/2017 7:00	12.6

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
571	9/22/2017 8:00	12.7
572	9/22/2017 9:00	12.7
573	9/22/2017 10:00	12.8
574	9/22/2017 11:00	12.8
575	9/22/2017 12:00	12.9
576	9/22/2017 13:00	12.9
577	9/22/2017 14:00	13
578	9/22/2017 15:00	13
579	9/22/2017 16:00	13
580	9/22/2017 17:00	13
581	9/22/2017 18:00	12.9
582	9/22/2017 19:00	12.8
583	9/22/2017 20:00	12.7
584	9/22/2017 21:00	12.7
585	9/22/2017 22:00	12.7
586	9/22/2017 23:00	12.6
587	9/23/2017 0:00	12.6
588	9/23/2017 1:00	12.6
589	9/23/2017 2:00	12.6
590	9/23/2017 3:00	12.5
591	9/23/2017 4:00	12.5
592	9/23/2017 5:00	12.5
593	9/23/2017 6:00	12.5
594	9/23/2017 7:00	12.5
595	9/23/2017 8:00	12.5
596	9/23/2017 9:00	12.5
597	9/23/2017 10:00	12.5
598	9/23/2017 11:00	12.5
599	9/23/2017 12:00	12.4
600	9/23/2017 13:00	12.4
601	9/23/2017 14:00	12.4
602	9/23/2017 15:00	12.5
603	9/23/2017 16:00	12.6
604	9/23/2017 17:00	12.6
605	9/23/2017 18:00	12.7
606	9/23/2017 19:00	12.8
607	9/23/2017 20:00	12.8
608	9/23/2017 21:00	12.8

STUDY: 29524 & 29525

CLIENT: AECOM

PROJECT: New Haven Harbor FNP

ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
Serial #: 10014864

°C
Mean: 12.7
Minimum: 12.2
Maximum: 14.1

	Date and Time	Celsius(°C)
609	9/23/2017 22:00	12.8
610	9/23/2017 23:00	12.9
611	9/24/2017 0:00	12.9
612	9/24/2017 1:00	13
613	9/24/2017 2:00	12.9
614	9/24/2017 3:00	13.1
615	9/24/2017 4:00	13.1
616	9/24/2017 5:00	13.1
617	9/24/2017 6:00	13.2
618	9/24/2017 7:00	13.2
619	9/24/2017 8:00	13.3
620	9/24/2017 9:00	13.2
621	9/24/2017 10:00	13.3
622	9/24/2017 11:00	13.4
623	9/24/2017 12:00	13.8
624	9/24/2017 13:00	14
625	9/24/2017 14:00	14
626	9/24/2017 15:00	14.1
627	9/24/2017 16:00	14.1
628	9/24/2017 17:00	14.1
629	9/24/2017 18:00	14.1
630	9/24/2017 19:00	14
631	9/24/2017 20:00	14
632	9/24/2017 21:00	13.8
633	9/24/2017 22:00	13.7
634	9/24/2017 23:00	13.6
635	9/25/2017 0:00	13.6
636	9/25/2017 1:00	13.5
637	9/25/2017 2:00	13.5
638	9/25/2017 3:00	13.5
639	9/25/2017 4:00	13.4
640	9/25/2017 5:00	13.5
641	9/25/2017 6:00	13.5
642	9/25/2017 7:00	13.5
643	9/25/2017 8:00	13.5
644	9/25/2017 9:00	13.6
645	9/25/2017 10:00	13.6
646	9/25/2017 11:00	13.5

STUDY: 29524 & 29525
 CLIENT: AECOM
 PROJECT: New Haven Harbor FNP
 ASSAY: *M. nasuta* and *N. virens* 28 Day Survival and Bioaccumulation Evaluation

TASK: Hourly Temperature Data
 Serial #: 10014864

°C
 Mean: 12.7
 Minimum: 12.2
 Maximum: 14.1

	Date and Time	Celsius(°C)
647	9/25/2017 12:00	13.5
648	9/25/2017 13:00	13.4
649	9/25/2017 14:00	13.1
650	9/25/2017 15:00	12.9
651	9/25/2017 16:00	12.7
652	9/25/2017 17:00	12.6
653	9/25/2017 18:00	12.7
654	9/25/2017 19:00	12.9
655	9/25/2017 20:00	12.9
656	9/25/2017 21:00	12.9
657	9/25/2017 22:00	12.9
658	9/25/2017 23:00	12.9
659	9/26/2017 0:00	12.8
660	9/26/2017 1:00	12.8
661	9/26/2017 2:00	12.7
662	9/26/2017 3:00	12.7
663	9/26/2017 4:00	12.6
664	9/26/2017 5:00	12.6
665	9/26/2017 6:00	12.6
666	9/26/2017 7:00	12.5
667	9/26/2017 8:00	12.5
668	9/26/2017 9:00	12.5
669	9/26/2017 10:00	12.5
670	9/26/2017 11:00	12.3
671	9/26/2017 12:00	12.2

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	See QC Summary Tables provided by Alpha Analytical
15. Were the SRM/CRM analyses within acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
19. Were surrogate recoveries within the required acceptance criteria?	See QC Summary Tables provided by Alpha Analytical
20. Were corrective action forms provided for all non-conforming data?	NA
21. Were all the species-specific test conditions in Appendix V met?	Yes, except as noted for <i>N. virens</i> daily water quality data
22. Were the test-specific age requirements met for each test species?	Yes
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	Yes
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	Yes
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	Yes

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species	Yes, except as noted for <i>N. virens</i>	Daily water quality data for <i>N. virens</i> missing for test days 27 and 28 (Appendix A).	Data Package
Test species age	Age/health within guidelines for each species (Appendix V)	Yes		Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No	Yes		Data Package (separate cover)
Water column toxicity test: Control mortality Control abnormality	$\leq 10\%$ mean $\leq 30\%$ mussel/oyster; $\leq 40\%$ clam larvae, $\leq 30\%$ sea urchin larvae	NA		
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	$\leq 10\%$ mean (no chamber $> 20\%$) See EPA (1994a) Section 9; Table 11.3	Yes		Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	No – PCB RLs slightly elevated; Methoxychlor
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No – See Narrative
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – See Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	N/A
19. Were surrogate recoveries within the required acceptance criteria?	No – See Narrative

Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	

Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	No	CCV- opening for method blank, LCS,LCSD: Benzo(b)fluoranthene @ 20% CCV- opening for SRM: Benzo(b)fluoranthene @20% CCV- opening for L1735126-01,01D, 01MS, 01MSD: Benzo(k)fluoranthene @ 17%, dibenz(a,h)anthracene @ 20% CCV – opening for L1735126-02 through-20: Benz(a)anthracene @ 17%, Dibenz(a,h)anthracene @20%, Benzo(g,h,i)perylene @ 17%, CCV – opening for L1735126-41, 41D, 41MS, 41MSD through -55: Benzo(b)fluoranthene @ 18%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes.	No	L1735126-41 MS: Naphthalene @ 48%, Acenaphthylene @ 48%, Acenaphthene @ 46%, Fluorene	In Data Package

	(Recovery Limits 50 to 120%; RPD <30%)		<p>@ 48%, Anthracene @ 43%, Chrysene @ 42%, Benzo(k)fluoranthene @ 45%</p> <p>MSD: Naphthalene @ 40%, Acenaphthylene @ 41%, Acenaphthene @ 39%, Fluorene @ 41%, Phenanthrene @ 49%, Anthracene @ 38%, Fluoranthene @ 43%, Pyrene @ 40%, Chrysene @ 36%, Benzo(k)fluoranthene @ 37%, Benzo(a)pyrene @ 45%, Dibenz(a,h)anthracene @ 47%, Benzo(g,h,i)perylene @ 48%</p> <p>RPD: Benzo(a)pyrene @ 37%</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV1: opening for Blank,LCS,LCSD L1735126-01, 01D, 01MS, 01MSD: Column a: gamma-BHC @ 18% Column b: gamma-BHC @ 23%, Aldrin @ 19%, Dieldrin @ 16% CCV2:opening for L1735126-02 through 20: Column a: gamma-BHC @ 19%, Aldrin @ 18%, Methoxychlor @ 20% Column b : gamma-BHC @ 22%, Heptachlor @ 16%, Aldrin @ 20%, Dieldrin @ 16%, 4,4-DDD @ 18% CCV3: opening for Blank2, LCS2, LCSD2, L1735126-21, 21D, 21MS, 21MSD: Column a : gamma-BHC @ 18%, Aldrin @ 17% Column b : gamma-BHC @ 25%, Aldrin @ 21%, heptachlor epoxide b @ 16%, Endosulfan I @ 16%, Dieldrin @ 18% CCV4: opening for L1735126-22 through -40	Retained at Lab

			Column a: gamma-BHC @ 22%, heptachlor @ 16%, Aldrin @ 20%, Dieldrin @ 16% Column b: gamma-BHC @ 20%, Aldrin @ 16% CCV5: opening for Blank3, LCS3, LCSD3, SRM: Column a : gamma-BHC @ 18%, Aldrin @ 16% CCV6: opening for L1735126-41, 41D, 41MS, 41MSD, 42-55: Column a: gamma-BHC @ 17%, Aldrin @ 16%	
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735126-01: MS: Oxychlorthane @ 49% MSD: Methoxychlor @ 47%, Oxychlorthane @ 47% L1735126-21: MS: Heptachlor epoxide @ 49%, Oxychlorthane @ 48% MSD: Heptachlor @ 49%, Oxychlorthane @ 48% L1735126-55: 4,4'-DDE (42%/35%) and cis-Nonachlor (45%-MSD only)	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735126-21D: 4,4-DDE @ 58%, endrin @ 49% L1735126-41D: 4,4-DDE @ 67%	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	L1735126-41MSD: BZ198 @ 229% on column a	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV- opening for L1735126-01,01D, 01MS, 01MSD: C18-BZ#195 @ 17%, C19-BZ#206 @ 21%, C110-BZ#209 @ 16% CCV – opening for L1735126-02 through-20: C17-BZ#170 @ 18%, C18-BZ#195 @ 20%, C19-BZ#206 @ 21%,	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM2: C13-BZ#28 @ 898% SRM3: C13-BZ#28 @ 448%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735126-01: MS: C13-BZ#18 @ 131%, C14-BZ#49 @ 46%, C17-BZ#183 @ 46% MSD: C13-BZ#18 @ 125% L1735126-21: MS: C13-BZ#18 @ 135% MSD: C13-BZ#18 @ 124% L1735126-41: MS: C12-BZ#8 @ 48%, C14-BZ#49 @ 40%, C15-BZ#105 @ 42%, C17-BZ#180	In Data Package

			@ 49%, C17-BZ#183 @ 39% MSD: C12-BZ#8 @ 44%, C14-BZ#44 @ 46%, C14-BZ#49 @ 38%, C15-BZ#87 @ 47%, C15-BZ#101 @ 48%, C15-BZ#105 @ 40%, C15-BZ#118 @ 49%, C16-BZ#128 @ 47%, C16-BZ#138 @ 49%, C17-BZ#170 @ 49%, C17-BZ#180 @ 44%, C17-BZ#183 @ 37%, C17-BZ#184 @ 48%, C18-BZ#195 @ 49%, C110-BZ#209 @ 47%	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	No	Results >3x IDL noted, on file at lab	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	No	L1735126-21: (Hg 77%/78%)	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735126-41: (Cr 22%), L1735126-49: (Cr 42%, Cu 24%, Pb 54%, Zn 49%), L1735126-01: (Pb 41%, Zn 39%), L1735126-21: (Pb 21%, Ni 52%)	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	
7. Were the correct stations sampled (include the precision of the navigation method used)?	
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	No – PCB samples -21 to -55 due to matrix interference
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	No – BZ18 in blank associated to -21 to -40
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	Yes
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No – see Narrative
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No – See Narrative
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	No – see Narrative

Table II-1 (Continued): Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	
22. Were the test-specific age requirements met for each test species?	
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	

Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment and Tissue Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)	No	CCV: opening for MB2, LCS/LCSD2, SRM2: Benz(a)anthracene @ 18% CCV: opening for L1735250-36 through -40: Benzo(k)fluoranthene @ 16%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735250-21MS: Naphthalene @ 34%, Acenaphthylene @ 36%, Acenaphthene @ 33%, Fluorene @ 35%, Phenanthrene @ 48%, Anthracene @ 38%, Fluoranthene @ 45%, Pyrene @ 44%, Chrysene @ 40%, Benzo(b)fluoranthene @ 47%, Benzo(k)fluoranthene @ 49%, Benzo(a)pyrene 39%, Indeno(1,2,3-cd)Pyrene @ 49%, Dibenz(a,h)anthracene @ 45%, Benzo(g,h,i)perylene @ 46% L1735250-21MSD: Naphthalene @ 41%, Acenaphthylene @ 41%, Acenaphthene @ 39%, Fluorene @ 41%, Anthracene @	In Data Package

			45%, Pyrene @ 50%, Chrysene @ 45%, Benzo(k)fluoranthene @ 43%, Benzo(a)pyrene 44% L1735250-41MS: Naphthalene @ 50%, Acenaphthene @ 50%, Anthracene @ 49%, Chrysene @ 50%, Benzo(k)fluoranthene @ 49%	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-3: Quality Control Summary for the Analyses of Pesticides in Sediment, Tissue, and Water Matrices

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV Opening for MB1, LCS/LCSD1, L1735250-01D/MS/MSD SRM1: channel A gamma-BHC @ 17% CCV opening for L1735250-02 through 20:channel A: gamma-BHC @ 18%, Aldrin @ 16% CCV opening for: MB2 Channel A: cis-nonachlor @ 16%, methoxychlor @ 18%, channel B: Methoxychlor @ 24% CCV opening for L1735250-42-50: Channel B : Methoxychlor @ 17%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	SRM3: cis-chlordane @ 32%	In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	L1735250-21MS: Hexachlorobenzene @ 42%, gamma-BHC @ 46%, Heptachlor @ 44%, Aldrin @ 46%, Heptachlor epoxide @ 36%, Oxychlordane @ 36%, trans-Chlordane @ 44%, Endosulfan I @ 42%,	In Data Package

			<p>cis-Chlordane @ 39%, trans-Nonachlor @ 40%, 4,4'-DDE @ 43%, Dieldrin @ 43%, Endrin @ 39%, Endosulfan II @ 39%, 4,4'-DDD @ 44%, cis-Nonachlor @ 44%, 4,4'-DDT @ 36%, Methoxychlor @ 35%</p> <p>L1735250-21MSD: Heptachlor epoxide @ 44%, Oxychlordane @ 44, Endosulfan I @ 50%, cis-Chlordane @ 46%, trans-Nonachlor @ 47%, Endrin @ 48%, Endosulfan II @ 48%, 4,4'-DDT @ 43%, Methoxychlor @ 43%</p> <p>L1735250-41MS: Heptachlor epoxide @ 48%, Oxychlordane @ 46%, cis-Chlordane @ 48%, trans-Nonachlor @ 49%, Endosulfan II @ 48%</p> <p>L1735250-41MSD: Heptachlor epoxide @ 44%, Oxychlordane @ 43%, Endosulfan I @ 50%, cis-Chlordane @ 47%, trans-Nonachlor @ 47%, cis-Nonachlor @ 48%, 4,4'-DDT @ 48%,</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	No	<p>L1735250-38: DBOB channel A @ 177%</p> <p>L1735250-42: BZ198 channel A @ 191%</p> <p>L1735250-41MSD: BZ198 channel B @ 23%</p>	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB Congeners) in Sediment, Tissue, and Water Matrices

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ($\pm 15\%$ D)	No	CCV opening for MB2,LCS/LCSD2, SRM2: C15-BZ#101 @ 53%, C16-BZ#138 @ 24% CCV opening for L1735250-36 through -40: C15-BZ#101 @ 78%, C16-BZ#128 @ 19% CCV opening for MB3, LCS/LCSD3, SRM3: C15-BZ3110 @ 57%, C19-BZ#206 @ 17% CCV opening for L1735250-41 through 55: C12-BZ#8 @ 20%, C15-BZ#101 @ 93%, C15-BZ#110 @ 38%, C19-BZ#206 @ 19%, C110-BZ#209 @ 16%	Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes.	No	L1735250-01MS: C13-BZ#18 @ 167%, C14-BZ#49 @ 50% L1735250-01MSD: C13-BZ#18 @ 144%,	In Data Package

	(Recovery Limits 50 to 120%; RPD <30%)		<p>C14-BZ#49 @ 50%</p> <p>L1735250-21MS: C12-BZ#8 @ 38%, C13-BZ#28 @ 43%, C14-BZ#44 @ 40%, C14-BZ#49 @ 32%, C14-BZ#52 @ 45%, C14-BZ#66 @ 39%, C15-BZ#87 @ 40%, C15-BZ#101 @ 44%, C15-BZ#105 @ 36%, C15-BZ#118 @ 39%, C16-BZ#128 @ 43%, C16-BZ#138 @ 41%, C16-BZ#153 @ 46%, C17-BZ#170 @ 42%, C17-BZ#180 @ 40%, C17-BZ#180 @ 40%, C17-BZ#183 @ 34%, C17-BZ#184 @ 43%, C17-BZ#187 @ 46%, C18-BZ#195 @ 43%, C19-BZ#206 @ 43%, C110-BZ#209 @ 43%</p> <p>L1735250-21MSD: C12-BZ#8 @ 46%, C14-BZ#44 @ 49%, C14-BZ#49 @ 39%, C14-BZ#66 @ 50%, C15-BZ#105 @ 44%, C15-BZ#118 @ 49%, C17-BZ#183 @ 42%</p> <p>L1735250-21MS/MSD RPD: C17-BZ#184 @ 33%, C15-BZ#101 @ 31%</p> <p>L1735250-41MS: C12-BZ#8 @ 50%, C14-BZ#49 @ 46%, C17-BZ#183 @ 46%</p> <p>L1735250-41MSD: C14-BZ#49 @ 49%</p>	
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue, and Water Matrices

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	N/A	Performed Annually	Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at Lab and On file at USACoE-NED
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	L1735250-53 (WG1056189-5) As(142%), Cu(142%), Zn(142%)	In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue, and Water Matrices

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)			Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)			In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)			Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ($\pm 15\%$ D)			Retained at Lab
Standard Reference Materials	Within the limits provided by vendor			In Data Package
Method Blank	No target analytes > RL			In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)			In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)			In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)			In Data Package
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-7: Quality Control Summary for Analyses of Sediment Grain Size and Total Organic Carbon

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 25%)			In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			In Data Package
Total Organic Carbon: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD <30%)			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Table II-8: Quality Control Summary for Biological Toxicity Testing only

Method Reference Numbers:

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Test condition requirements for each species: Temperature, Salinity, pH, D.O., Ammonia (Total, Un-ionized)	Test conditions within the requirements specified for each species			In Data Package
Test species age	Age/health within guidelines for each species (Appendix V)			In Data Package
Bulk physical/chemical analyses (If required by the Sampling plan)	Required? If so, performed? Yes or No			In Data Package
Water column toxicity test: Control mortality Control abnormality	 < 10% mean < 30% mussel/oyster; < 40% clam larvae, < 30% sea urchin larvae			In Data Package
Sediment toxicity test: Control mortality Compliance with applicable test acceptability requirements in Table 11.3 (EPA 1994a)	 < 10% mean (no chamber >20%) See EPA (1994a) Section 9; Table 11.3			In Data Package

* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

Reference:

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, April 2004.

ASSAY REVIEW CHECKLIST

STUDY#: 29524 / 29525

CLIENT: AECOM

PROJECT: New Haven Harbor FNP Contract # W912WJ-17-D-0003

ASSAY: 28-day Survival and Bioaccumulation

Analyst Data Review	Date	Initials	Comments
Chains of Custody Complete	08/21/17	JTP	
Sample Receipt Complete	↓	↓	
Organism Culture Sheet(s)	11/02/17	GRS	
Bench Sheets Complete (dates, times, initials, etc...)	↓	↓	
Water Quality Data Complete	↓	↓	
Weights Reported	NA	NA	
Assay Acceptability Review	11/02/17	GRS	

Technical Report Review	Date	Initials	Comments
Statistical Analysis			
Survival	9/28/17	NR	
Chemical	4/12/17 Mn 11/17/17 NR	NR	
Statistical Analysis Reviewed	9/28/17	LB (Mn)	11/28/17 AK - Mn body burden 11/28/17 NV body burden (NR)
Data Acceptability Review	9/29/17	NR	9/29/17 W - NV only
Support Documentation			
Temperature Data Logger	11/2/17	NR	
Daily WQ Data	11/2/17	NR	
Overlying and/or Pore Water Chemistry	NA		
Other Chemical Analysis Data	11/9, 11/21/17	NR	Rec'd from Alpha Analytical
Draft Report	11/30/17	NR	
Final Report Reviewed	12/4/17	W	
QA Audit/Review Complete			
Final Report Printed - PDF	12/4/17	W	
	↓	↓	
Report E-mailed / Faxed	↓	↓	
Report Logged Out	↓	↓	

