NEW HAVEN HARBOR
CONNECTICUT
NAVIGATION IMPROVEMENT PROJECT

INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT

APPENDIX J
SUITABILITY DETERMINATION

CENAE–PDE 23 May 2019

MEMORANDUM FOR: Barbara Blumeris, Project Manager, CENAE-PDP

SUBJECT: Suitability Determination for the New Haven Harbor Navigation Improvement and Maintenance Project, New Haven and West Haven, Connecticut.

1. **Summary:**

This memorandum addresses the suitability of dredged material from the proposed improvement and maintenance dredging of the New Haven Harbor Federal Navigation Project (FNP) for unconfined open water placement at the Central Long Island Sound Disposal Site (CLDS) and at beneficial use sites in and around New Haven Harbor. This determination is an addendum to a previous determination for the New Haven Harbor FNP dated 7 June 2018. The New England District (NAE) of the U.S. Army Corps of Engineers (USACE) finds that sufficient data has been provided to satisfy the evaluation and testing requirements of Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) and Section 404 of the Clean Water Act (CWA). Based on an evaluation of the project site and the material proposed to be dredged, these sediments have been found to be suitable for unconfined open water placement as proposed.

2. **Project Description:**

The New England District conducted a feasibility study to evaluate improvements to the New Haven Harbor FNP. Aspects of the Tentatively Selected Plan include: deepening and widening the main ship channel, widening the channel bend at Southwest Ledge, straightening the channel bend downstream of the existing turning basin; and deepening and widening the turning basin. These combined actions would require the mechanical or hydraulic removal of up to 4,400,000 cubic yards of sediment (maintenance and improvement material) and up to 43,500 cubic yards of rock.

Dredged sediments are expected to be a mix of poorly graded sand and fine grained material within the existing channel profile and adjacent harbor seafloor with glaciofluvial deposits at depth. To the extent practical suitable dredged material will be beneficially reused for marsh creation at the Sandy Point Dike, oyster habitat creation behind the East Breakwater, filling existing sand borrow pits in Morris Cove and the West River, and to cover historic dredged material disposal mounds at the CLDS. Rock generated from the project is expected to be placed adjacent to and behind the West Breakwater to create a reef structure.

Details on the evaluated alternatives, Tentatively Selected Plan, and proposed placement sites can be found in the Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) for the project (USACE 2018).

In support of the FR/EIS NAE collected sediment vibracores in August 2017 and analyzed the sediment for the full suite of physical, chemical, and biological parameters specified in the Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual (Green Book, EPA/USACE 1991) and the Regional Implementation Manual (RIM, EPA/USACE 2004) at the stations shown on Figure 1. Based on the results of biological testing and subsequent risk assessment modeling NAE finalized a suitability determination on 7 June 2018 that found the majority of the New Haven Harbor material suitable for openwater placement with the exception of two composites in the expanded turning basin area. The 2018 suitability determination received concurrence from the U.S. Environmental Protection Agency Region 1 (EPA) and the Connecticut Department of Energy and Environmental Protection (CT DEEP).

Through the evaluation of project alternatives NAE refined the alignment and dimensions of the proposed project in 2018 after the completion of the initial sediment characterization effort. This supplemental suitability determination is intended to evaluate the elements of the Tentatively Selected Plan that differ from the originally proposed project including a reduction in the size and a shift in the location of the turning basin.

3. **Conceptual Site Model:**

NAE reviewed historic testing data, previous environmental assessments, water quality data, adjacent land-use information, and interviewed local officials to develop a conceptual site model (CSM) for New Haven Harbor (Figure 2). This CSM was used to characterize the system and to identify potential sources of contamination, site-specific contaminants of concern, exposure pathways, and biological receptors in order to inform the sampling and analysis of project sediments. The specific elements of the CSM were detailed in the 7 June 2018 suitability determination and resulted in a moderate to high risk ranking for the project according to the following matrix (adapted from USACE 2014):

Rank	Guidelines
Low	Few or no sources of contamination. Data available to verify no significant potential for adverse biological effects.
Low-Moderate	Few or no sources of contamination but existing data is insufficient to confirm ranking.
Moderate	Contamination sources exist within the vicinity of the project with the potential to produce chemical concentrations that may cause adverse biological effects.
High	Known sources of contamination within the project area and historical data exists that has previously failed biological testing.

4. **Sampling, Testing, and Analysis:**

Based on the moderate to high risk ranking for the New Haven Harbor improvement and maintenance project, and the revised project alignment, NAE prepared a second sampling and analysis plan (SAP) for the project on 1 August 2018 which was coordinated with EPA Region 1 and CT DEEP. The SAP called for 13 sediment cores to be collected from the project areas. Sample stations are identified on Figure 3 and were located to characterize the revised turning basin and channel alignment (TB-1, TB-2, R', S', V', W'), define the extent of any possible unsuitable material in the inner harbor (US-1, US-2, DS-1, DS-2), and to evaluate a proposed Confined Aquatic Disposal (CAD) cell for the containment of potential unsuitable material (CAD-1, CAD-2, CAD-3).

NAE collected sediment vibracores between 22 and 25 October 2018. The cores were collected to the project depth of the Tentatively Selected Plan, -40 feet mean lower low water (MLLW), plus two feet of allowable overdepth. The cores were described in the field and individual sediment horizons were sub-sampled for grain size and bulk chemistry analysis. The remaining material was then composited based on geographic location and grain size for subsequent analysis of whole sediment toxicity, suspended particulate phase toxicity, and bioaccumulation. As Composite V'W' already passed the whole sediment toxicity and bioaccumulation assessment, documented in the 7 June 2018 suitability determination, this composite was only re-evaluated for suspended phase toxicity.

Grain size results were consistent with the previous sampling effort and were dominated by fine grained material in upper core segments with a sharp transition to coarse grained material at depth within the FNP (Table 1). Stations in the proposed CAD cell area transitioned from organic silt in the upper segments to a clayey silt at depth. Native sand and clay intervals were excluded from biological testing.

Table 1. Grain Size Results

Sample ID	% Gravel	% Sand			% Fines
		Coarse	Medium	Fine	
US-1 (0.0-5.5')	0.6	2.8	12.2	8.3	76.2
US-2 (0.0-5.0')	1.2	1.5	6.2	10.3	80.9
US-2 (5.0-6.0')	0.0	0.0	3.4	78.8	17.8
CAD-1 (0.0-4.0')	1.1	0.6	2.9	9.6	85.8
CAD-1 (4.4-8.0')	0.4	0.8	3.0	6.5	89.4
CAD-2 (0.0-5.3')	2.9	1.2	4.3	17.2	74.5
CAD-2 (5.3-10.8')	0.4	0.7	3.7	10.0	85.2
CAD-3 (0.0-5.5')	1.4	1.2	3.0	8.4	86.0
CAD-3(5.5-9.9')	0.8	1.4	7.0	14.4	76.4
DS-1 (0.0-7.0')	0.3	2.4	7.9	4.4	84.9
DS-2 (0.0-7.0')	0.0	0.1	0.5	2.1	97.4
TB-1 (0.0-5.2')	0.0	0.3	0.5	2.1	97.0
TB-1 (5.2-6.0')	0.0	0.0	0.3	56.0	43.8
TB-2 (0.0-6.0')	0.0	0.4	0.4	0.8	98.4

*Stations R', S', V', and W' analyzed for grain size in previous round of testing

As no project specific contaminants of concern were identified in the CSM, individual sub-samples were analyzed for the standard suite of contaminants specified in the RIM. Remaining sample material was composited into six samples to undergo whole sediment bioassays, suspended particulate phase toxicity tests, and bioaccumulation tests according to the SAP.

Bulk Sediment Chemistry Results

To examine sediment chemistry results in an ecologically meaningful context NAE compared the bulk sediment chemistry concentrations against applicable sediment quality guidelines (SQGs). Applicable SQG screening values for marine and estuarine sediments are the National Oceanic and Atmospheric Administration (NOAA) effects-range low (ERL) and effects-range median (ERM). ERL/ERM values are empirically derived guidelines that identify contaminant levels that indicate when the potential for toxic effects are unlikely (ERL) and when an increased probability of toxic effects is evident (ERM). These SQGs serve as a useful screening tool to inform the sampling and testing process but in order to evaluate the New Haven Harbor improvement project under the MPRSA and the CWA the suitability determination is based on the results of the biological testing presented in subsequent sections.

All contaminants of concern in the clayey silt intervals from the stations within the CAD cell area were either not-detected or detected at concentrations below the ERL. The overlying organic silt layer in the CAD cell area, and in the FNP stations, were also characterized by non-detects for the majority of pesticides

and polychlorinated biphenyls (PCBs) but had detectable concentrations of most metals, polycyclic aromatic hydrocarbons (PAHs), and individual PCBs and pesticides. Several of these concentrations exceeded the ERL value but there were only isolated exceedances of the ERM (mercury at CAD-3 and Total PCBs at DS-2 and W'). Bulk chemistry results, SQGs, and mean reference area concentrations for CLDS are presented in Appendix A.

Evaluating Potential Effects to Benthic Organisms

The CSM identified the uptake of placed dredged material by benthic organisms as a potential exposure pathway for the New Haven Harbor improvement project. Sediment toxicity of the composite samples was determined through a 10-day whole sediment acute toxicity test as described in the Green Book (EPA/USACE 1991). Mortality in the control sample of the 10-day whole sediment acute toxicity test was less than 20% for the amphipod (*Leptocheirus plumulosus)* and less than 10% for the mysid (*Americamysis bahia)*; therefore the test was valid based on criteria established in the Green Book.

Mean survivability for *L. plumulosus* ranged from 90% to 99% for the five evaluated composites and was not statistically different from the survivability of the amphipods exposed to reference sediment. The material proposed to be dredged is not considered acutely toxic to the amphipods used in this assessment.

Mean survivability for *A. bahia* ranged from 91% to 96% for the five evaluated composites and was not statistically different from the survivability of the mysids exposed to reference sediment. The material proposed to be dredged is not considered acutely toxic to the mysids used in this assessment. Results from the whole sediment toxicity test are presented in Appendix B.

Evaluating Potential Effects to Human Health

In order to assess the potential risk to human health through the exposure pathways identified in the CSM a 28-day bioaccumulation test was performed with the clam *Macoma nasuta* and marine worm *Nereis virens.* Results showed statistically significant increases of certain contaminants in tissue samples from clams exposed to project sediments when compared to tissue samples from clams exposed to reference area sediments including cadmium, lead, 4,4'-DDE, and several individual PAHs.

Copper was the only contaminant with a significant increase in worm tissue uptake. These tissue burden data were analyzed with the EPA Bioaccumulation Evaluation Screening Tool (BEST) model to determine the toxicological significance of bioaccumulation from exposure to the dredged sediment.

The BEST model includes an evaluation of the non-carcinogenic risk, carcinogenic risk, and any observed exceedances of Food and Drug Administration (FDA) thresholds to determine potential adverse impacts to human health from the consumption of lobster, fish, or shellfish exposed to project sediments. Modeling based on the tissue contaminant loads measured in the New Haven Harbor improvement project found that all contaminants were below the EPA Hazard Quotient for non-carcinogenic risk of 1.0, below the EPA carcinogenic risk threshold (1×10^{-4}), and were also less than established FDA action levels. Tissue body burden concentrations and BEST model outputs are provided in Appendix C.

Evaluating Potential Effects to Fish and Marine Invertebrates

The conceptual site model identified the uptake of contaminants from the water column during the placement of dredged material as a potential exposure pathway for the New Haven Harbor navigation improvement project. 33 U.S.C. §1416(f) requires that all Federal dredging projects, and all non-Federal projects of more than 25,000 cubic yards conducted under permit, and proposing to place dredged material in the waters of Long Island Sound, are subject to the requirements of the MPRSA. Since one of the proposed placement sites for the project, CLDS, is in Long Island Sound the dredged material has been evaluated based on the requirements of both the MPRSA and the CWA. The potential for water column toxicity was determined though a suspended particulate phase toxicity test as described in the Green Book (EPA/USACE 1991).

Suspended particulate phase toxicity results were used to determine the median lethal concentration (LC_{50}) for each species exposed to elutriates from the sediment composites. The tests were carried out in accordance with the method established in the Green Book using the mysid *Americamysis bahia,* the minnow *Menidia beryllina,* and the urchin *Arbacia punctulata*.

Porewater samples from all six composites had high levels of ammonia upon arrival at the laboratory. Elevated ammonia concentrations occur naturally in sediment and cause toxicity in the static environmental conditions of a laboratory suspended particulate phase test (Kennedy et al 2015). In open water conditions, such as the proposed placement areas, ammonia is a non-persistent compound that dissipates rapidly and is not considered a contaminant of concern for dredged material evaluations (Kennedy et al 2015).

MPRSA § 227.27 Limiting Permissible Concentration (LPC) (2) defines the LPC as the concentration of waste or dredged material in the receiving water which, after allowance for initial mixing, as specified in § 227.29, will not exceed a toxicity threshold defined as 0.01 of a concentration shown to be acutely toxic to sensitive marine organisms in a bioassay carried out in accordance with

approved EPA procedures. As stated in §227.27(a)(3) of the MPRSA when there is reasonable scientific evidence on a specific waste material to justify the use of an application factor other than 0.01 the alternative application factor shall be used in calculating the LPC. In cases where ammonia is the driver for an observed response in a suspended particulate phase test EPA Region 1 and NAE have agreed to use an alternate application factor of 0.05 to determine the LPC for a project.

Following the protocol developed by NAE and EPA Region 1 to identify potential toxicity from ammonia, NAE directed the laboratory to create a set of elutriate samples for the suspended particulate phase test and then purge the ammonia from a subset of the remaining sediment. Once unionized ammonia levels in the porewater of the purged sediment dropped below 0.1 ppm the laboratory created a second batch of elutriates to run parallel suspended particulate phase tests with the ammonia purged sediment.

Suspended particulate phase test results from the unpurged sediment showed negative effects on survival in all composites with LC_{50} values ranging from 3%-22% for the most impacted species (*Arbacia punctulata*). In contrast, the LC_{50} values from the ammonia purged sediment were >100% for all composites and all test species (Table 2). Based on this evaluation NAE identified unionized ammonia as the sole driver for the toxicity observed in the suspended particulate phase tests and applied the alternate application factor (0.05) to calculate the LPC. Suspended particulate phase toxicity results, elutriate chemistry concentrations, and unionized ammonia levels are presented in Appendix B.

To determine if the discharge of dredged material would meet the limiting permissible concentration NAE utilized the Short-Term Fate (STFATE) numerical model to analyze the disposal cloud as it is descends through the water column after release from a scow. Results of the STFATE evaluation using the lowest LC_{50} value predicted that the water column would attain the LPC within four hours of disposal and therefore meet the criteria in the testing protocol based on the disposal of 4,000 cubic yards of material at the CLDS.

A summary of biological testing results, water column evaluation, and risk assessment modeling is presented in Table 2 below. Supporting data is provided in Appendix A (bulk chemistry results and SQGs), Appendix B (biological testing results and elutriate chemistry), and Appendix C (tissue chemistry results and BEST model output).

Table 2. Summary of Biological Testing and Modeling Results for the New Haven Harbor Federal Navigation Improvement Project

Composite	Whole Sediment Toxicity		Suspended Particulate Phase Raw Elutriate LC_{50} (Ammonia Purged Elutriate LC_{50})			Water Column Modeling	Bioaccumulation Risk Modeling	Stations	Determination
	L. plumulosus	*A. bahia*	*A. bahia*	*M. berylina*	*A. punctulata*	STFATE	B.E.S.T. Result		
V'W'	PASS*	PASS*	>100% (>100%)	65% (>100%)	7% (>100%)	PASS	No Unacceptable Risk*	V', W'	Suitable
R'S'	PASS	PASS	>100% (>100%)	57% (>100%)	13% (>100%)	PASS	No Unacceptable Risk	R',S'	Suitable
Upstream	PASS	PASS	74% (>100%)	58% (>100%)	3% (>100%)	PASS	No Unacceptable Risk	US-1, US-2	Suitable
Downstream	PASS	PASS	>100% (>100%)	69% (>100%)	10% (>100%)	PASS	No Unacceptable Risk	DS-1, DS-2	Suitable
Turning Basin	PASS	PASS	73% (>100%)	56% (>100%)	5% (>100%)	PASS	No Unacceptable Risk	TB-1, TB-2	Suitable
CAD Cell	PASS	PASS	>100% (>100%)	>100% (>100%)	22% (>100%)	PASS	No Unacceptable Risk	CAD-1, 2, 3	Suitable

* Results based on previous round of testing
Limiting Permissible Concentration for STFATE calculated using the alternate application factor for ammonia (0.05)

5. **Suitability Determination:**

Based on the results of biological testing and subsequent risk assessment modeling no significant adverse impacts were found for the New Haven Harbor navigation improvement project. Based on the testing and evaluation requirements set forth in Section 103 of the Marine Protection, Research, and Sanctuaries Act and Section 404 of the Clean Water Act the sediments to be dredged from the New Haven Harbor navigation improvement project are considered suitable for unconfined open water placement as proposed.

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Concur: ☒ Do Not Concur: ☐

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Concur: ☒ Do Not Concur: ☐

References:

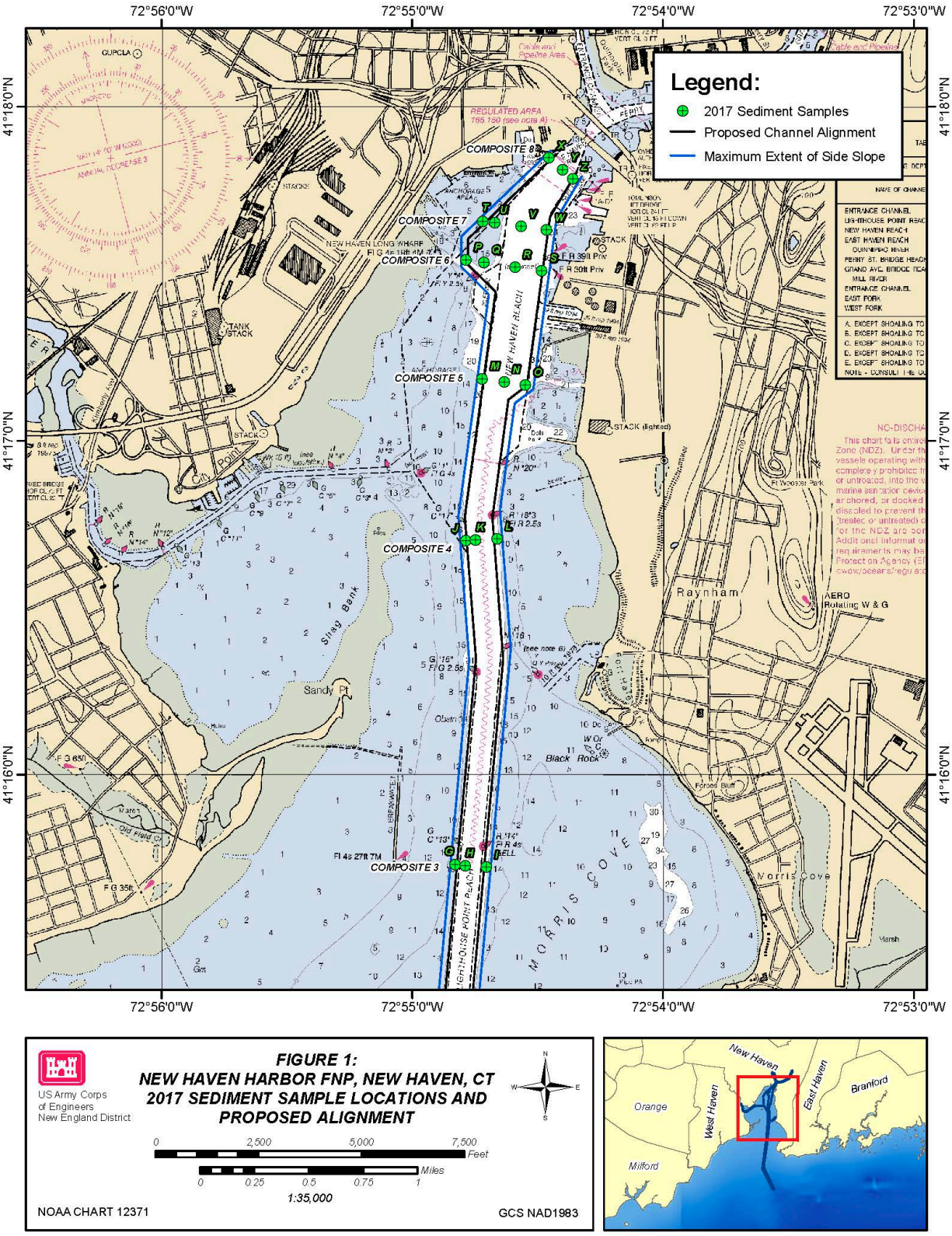
EPA/USACE 1991. Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual. Environmental Protection Agency, Office of Water and Department of the Army, United States Army Corps of Engineers. Washington, D.C.

EPA/USACE 2004. Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters. U.S. EPA Region 1, Boston, MA/U.S. Army Corps of Engineers, New England District, Concord, MA.

Kennedy, A.J., Lotufo, G.R., and Steevens, J.A. 2015. Review of Dredging Elutriate Application Factors: Relevance to Acute-to-Chronic Protection, Contaminant, and Endpoint Specificity. Dredging Operations Technical Support Program. U.S. Army Corps of Engineers, Engineering Research and Support Center. ERDC/EL TR-15-10. July 2015.

USACE 2014. Dredged Material Evaluation and Disposal Procedures, User Manual. Dredged Material Management Program, U.S. Army Corps of Engineers, Seattle District.

USACE 2018. Draft Integrated Feasibility Report and Environmental Impact Statement. New Haven Harbor Navigation Improvement Project, Connecticut. U.S. Army Corps of Engineers, New England District.


72°56'0"W
72°55'0"W
72°54'0"W
72°53'0"W
41°18'0"N
41°17'0"N
41°16'0"N
Legend:
2017 Sediment Samples
Proposed Channel Alignment
Maximum Extent of Side Slope
COMPOSITE 8
COMPOSITE 7
COMPOSITE 6
COMPOSITE 5
COMPOSITE 4
COMPOSITE 3
NEW HAVEN REACH
Raynham
Morris Cove
Black Rock
Sandy Pt
Slag Bank
City Point
Light House Point Reach
US Army Corps of Engineers New England District
FIGURE 1:
NEW HAVEN HARBOR FNP, NEW HAVEN, CT
2017 SEDIMENT SAMPLE LOCATIONS AND PROPOSED ALIGNMENT
0 2,500 5,000 7,500 Feet
0 0.25 0.5 0.75 1 Miles
1:35,000
NOAA CHART 12371
GCS NAD1983
New Haven
Orange
West Haven
East Haven
Branford
Milford

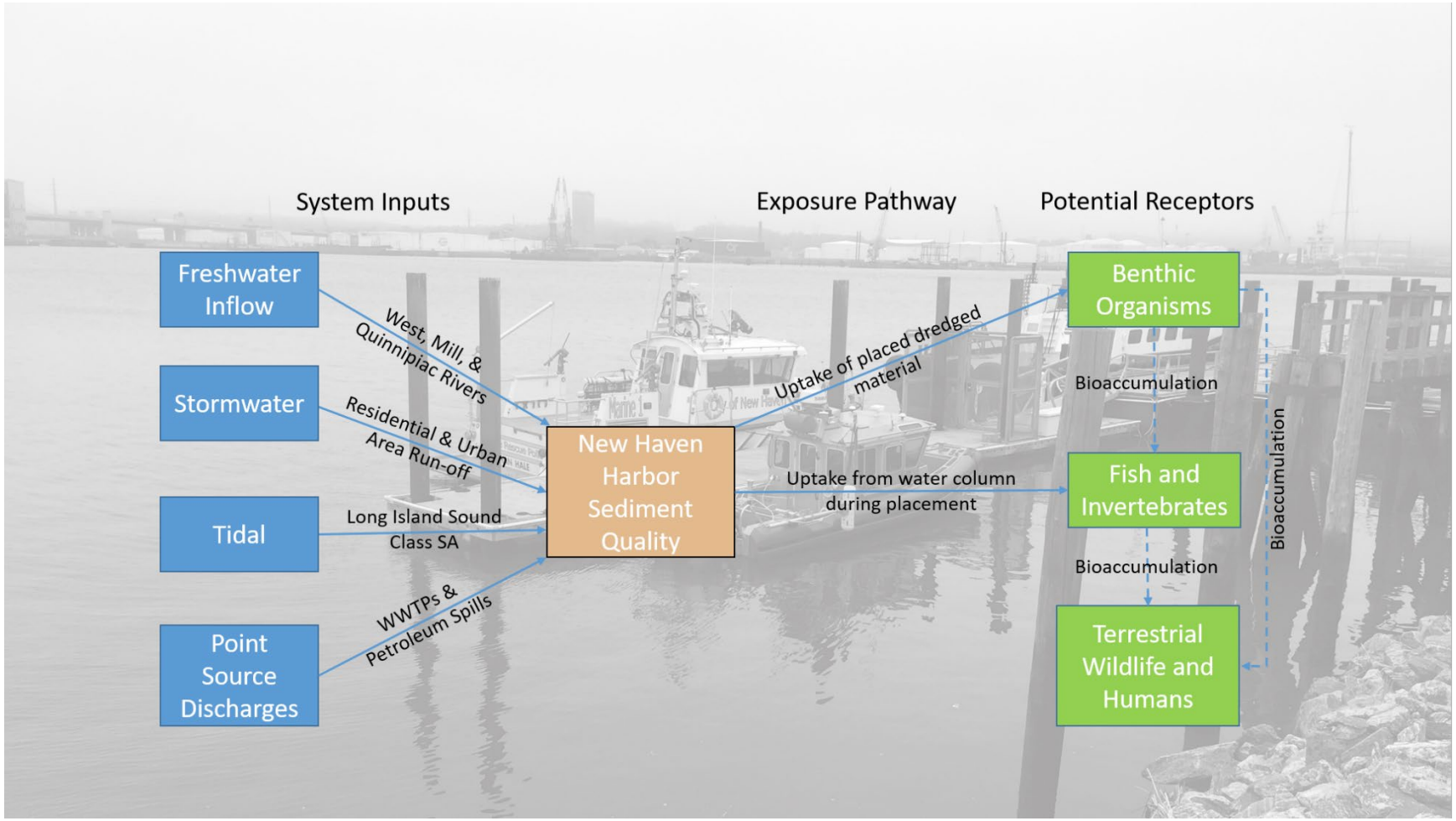


Figure 2. Conceptual Site Model for New Haven Harbor

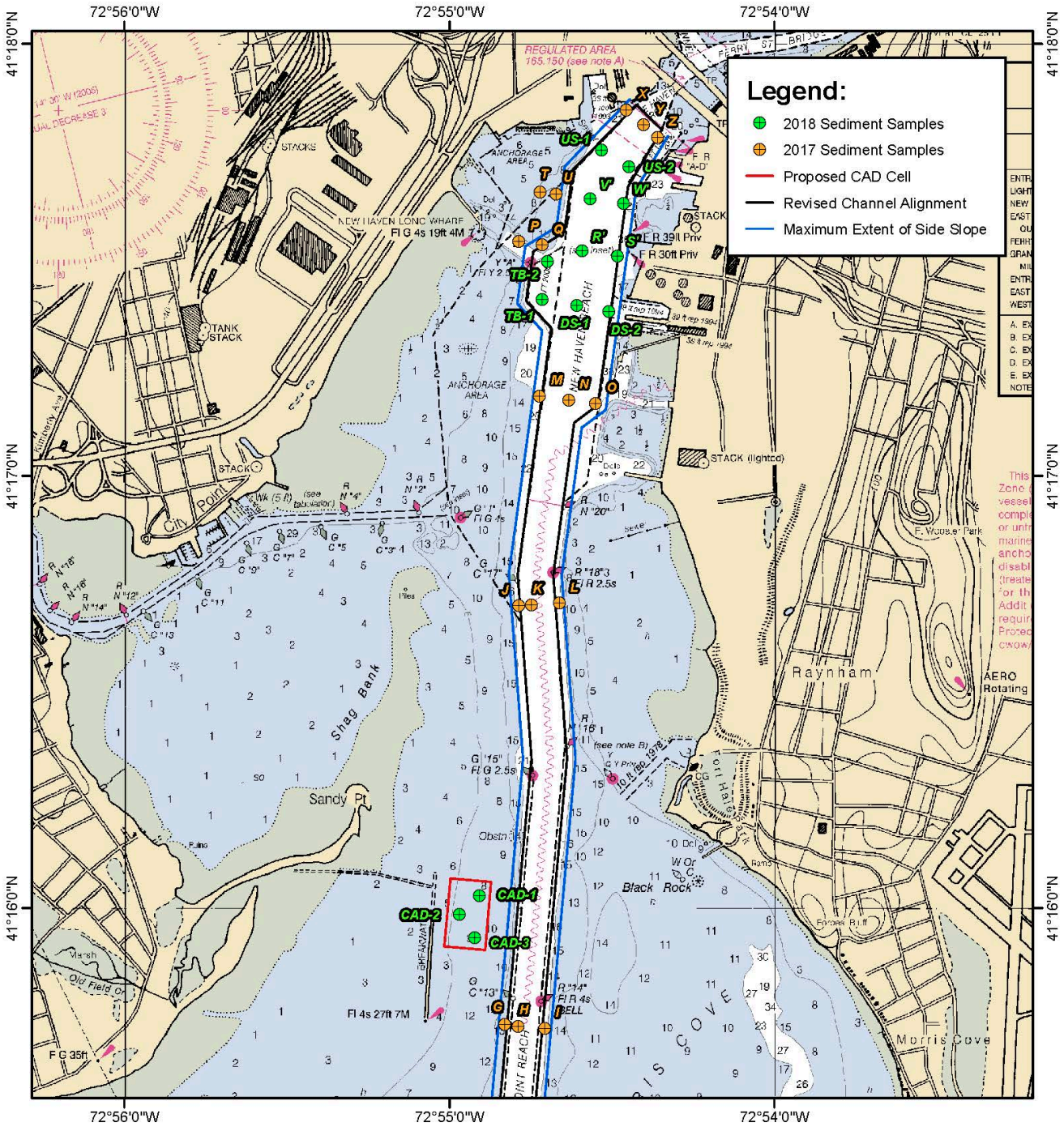


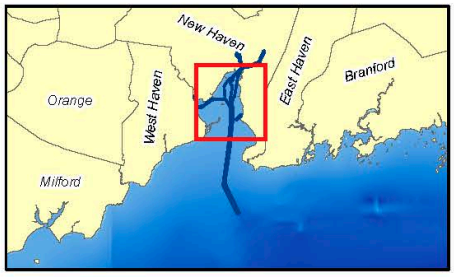
FIGURE 3:
NEW HAVEN HARBOR FNP, NEW HAVEN, CT
2018 SEDIMENT SAMPLE LOCATIONS AND PROPOSED ALIGNMENT

US Army Corps of Engineers
New England District

0 1,000 2,000 3,000 4,000 5,000 Feet
0 0.25 0.5 0.75 1 Miles
1:30,000

NOAA CHART 12371

GCS NAD1983



Appendix A

Sediment Chemistry Results

Appendix A
Sediment Chemistry Results

Analyte	Unit	ERL	ERM	CLDS Reference	CAD-1 0-4.0	CAD-1 4.4-9.0	CAD-2 0.5.3	CAD-2 5.3-10.8	CAD-3 0-5.5	CAD-3 6.1-9.9	DS-1 0-7.3	DS-2 0-7.0	R'	S'	TB-1 0-5.2	TB-1 5.2-6.0	TB-2	US-1 0-5.5	US-2 0.0-5.0	US-2 5.0-6.0	V'	W'
Total Solids (%)	%				42.7	50.7	43.6	50.4	45.8	55.4	37.4	37.5	40.8	41.2	37.5	73.4	36.6	36.3	42	74.9	32.1	38.9
Moisture (%)	%				57.3	49.3	56.4	49.6	54.2	44.6	62.6	62.5	59.2	58.8	62.5	26.6	63.4	63.7	58	25.1	67.9	61.1
Total Organic Carbon (%)	%			1.76	2.2	1.27	2.085	1.33	2.03	1.6	2.525	3.02	2.875	2.49	2.505	0.071	2.705	3.37	2.905	0.0165	2.92	3.065
Total Metals (mg/kg)																						
Arsenic, Total	mg/kg	8.2	70	5.9	9.64	7.2	10.3	7.38	9.33	7.29	9.97	9	9.5	7.85	8.12	1.64	9.42	10.3	9.43	1.31	10.4	8.24
Cadmium, Total	mg/kg	1.2	9.6	0.1	1.01	0.163 J	0.574	0.133 J	0.568	0.141 J	1.53	1.77	1.42	1.46	0.618	0.068 J	0.597	1	2.48	0.267 U	0.545 J	2.74
Chromium, Total	mg/kg	81	370	35.7	74.2	27.4	45.5	26.6	51.2	25.5	102	105	97.9	94.4	64.9	9.69	67.8	85.2	117	6.16	67.8	110
Copper, Total	mg/kg	34	270	26.1	139	10.5	75.6	8.63	103	10.5	135	134	144	132	86.7	11.9	89.7	129	178	5.2	86.2	189
Lead, Total	mg/kg	46.7	218	24.3	70.6	8.92	48.8	7.78	56.4	9.49	75.7	69.5	85	79.5	49.8	8.4	53.8	77.9	100	5.3	55.4	109
Nickel, Total	mg/kg	20.9	51.6	20.0	23.3	16.5	19.8	16.4	20	16.4	28.8	28	31.7	28.8	23.6	5.58	25	30.2	31.7	4.16	27.1	31.4
Zinc, Total	mg/kg	150	410	91.2	210	48.9	142	48.4	159	44.3	224	235	226	214	165	21.4	173	216	263	11.5 J	173	256
Mercury, Total	mg/kg	0.15	0.71	0.1	0.699	0.007 J	0.667	0.021 U	0.784	0.015 J	0.382	0.433	0.367	0.383	0.219	0.016	0.21	0.299	0.418	0.014 U	0.191	0.49
Organochlorine Pesticides (ug/kg)																						
4,4'-DDD	ug/kg	2	20	0.38	0.541 U	0.463 U	0.54 U	0.456 U	2.05	0.421 U	0.909	1.5	1.21	1.3	0.704	0.654 U	0.932	1.56	1.84	0.599 U	0.77	1.83
4,4'-DDE	ug/kg	2.2	27	0.56	1.52	0.463 U	0.942	0.456 U	0.926	0.421 U	3.6	4.93	4.66	4.2	2.03	0.654 U	1.93	3.77	6.16	0.599 U	1.62	5.72
4,4'-DDT	ug/kg	1	7	0.07	0.541 U	0.463 U	0.54 U	0.456 U	0.541	0.421 U	1.36	1.73	3.4	3.44	0.691	0.654 U	2.14	3.42	4.7	0.599 U	0.768	6.96
Total DDT		1.58	46.1	1.02	2.061	0.6945 U	1.482 0	0.684 U	3.517 0	0.6315 U	5.869 0	8.16 0	9.27 0	8.94 0	3.425 0	0.981 U	5.002 0	8.75 0	12.7 0	0.8985 U	3.158 0	14.51 0
Aldrin	ug/kg			0.03	0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	0.585 U	0.597 U	0.662 U	0.654 U	0.656 U	0.631 U	0.571 U	0.599 U	0.747 U	0.595 U
cis-Chlordane	ug/kg				0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	1.04	0.754	0.662 U	0.654 U	0.656 U	1.38	1.49	0.599 U	0.825	2.16
cis-Nonachlor	ug/kg				0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	1.52	0.934	0.662 U	0.654 U	0.656 U	0.687	1.85	0.599 U	0.747 U	1.89
Dieldrin	ug/kg	0.02	8	0.15	0.541 U	0.463 U	0.54 U	0.456 U	0.533	0.421 U	0.799	1.81	0.953	1.2	0.662 U	0.654 U	1.79	1.25	1.12	0.599 U	0.954	1.12
Endosulfan I	ug/kg			0.04	0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	0.585 U	0.597 U	0.662 U	0.654 U	0.656 U	0.631 U	0.571 U	0.599 U	0.747 U	0.595 U
Endosulfan II	ug/kg			0.47	1.38	0.463 U	0.887	0.456 U	0.989	0.421 U	2.92	0.652 U	5.46	6.3	1.46	0.654 U	0.656 U	3.97	10.2	0.599 U	1.29	12.4
Endrin	ug/kg			0.04	0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	0.585 U	0.597 U	0.662 U	0.654 U	0.656 U	0.631 U	0.571 U	0.599 U	0.747 U	0.595 U
gamma-BHC	ug/kg				0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	0.688	0.883	0.662 U	0.654 U	0.656 U	0.998	1.23	0.599 U	0.747 U	1.54
Heptachlor	ug/kg			0.06	0.541 U	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.662 U	0.652 U	0.585 U	0.597 U	0.662 U	0.654 U	0.656 U	0.631 U	0.571 U	0.599 U	0.747 U	0.595 U
Heptachlor epoxide	ug/kg			0.04	1.08 U	0.927 U	1.08 U	0.913 U	1.05 U	0.843 U	1.32 U	1.3 U	1.17 U	1.19 U	1.32 U	1.31 U	1.31 U	1.26 U	1.14 U	1.2 U	1.49 U	1.19 U
Hexachlorobenzene	ug/kg				1.08 U	0.927 U	1.08 U	0.913 U	1.05 U	0.843 U	1.32 U	1.3 U	1.17 U	1.19 U	1.32 U	1.31 U	1.31 U	1.26 U	1.14 U	1.2 U	1.49 U	1.19 U
Methoxychlor	ug/kg			0.14	3.6	1.85 U	2.16 U	1.82 U	3.71	1.68 U	2.65 U	3.66	6.14	3.44	2.65 U	2.61 U	2.62 U	3.89	7.97	2.4 U	2.99 U	7.88
Oxychlordane	ug/kg				4.2	0.927 U	1.08 U	16.4	1.05 U	0.843 U	3.81	4.82	7.92	6.41	3.24	1.31 U	3.73	5.85	10.6	1.2 U	3.66	12.3
Toxaphene	ug/kg			14.62	27.2 U	23.3 U	27.1 U	22.9 U	26.3 U	21.2 U	33.2 U	32.7 U	29.4 U	30 U	33.2 U	32.8 U	32.9 U	31.7 U	28.6 U	30.1 U	37.5 U	29.9 U
trans-Chlordane	ug/kg				3.25	0.463 U	1.42	0.456 U	1.36	0.421 U	7.57	8.37	28.1	27	5.12	0.654 U	5.78	17.6	36	0.599 U	4.62	56.3
trans-Nonachlor	ug/kg				0.666	0.463 U	0.54 U	0.456 U	0.524 U	0.421 U	0.721	0.852	2.99	1.97	0.662 U	0.654 U	0.656 U	1.86	3.65	0.599 U	0.747 U	0.595 U
Polycyclic Aromatic Hydrocarbons (ug/kg)																						
Acenaphthene	ug/kg	16	500	2.02	54.1 U	9.27 U	54 U	9.13 U	52.4 U	8.43 U	66.2 U	82.3	40 J	46.2 J	66.2 U	13.1 U	65.6 U	51.4 J	51.2 J	12 U	74.7 U	67
Acenaphthylene	ug/kg	44	640	10.26	47.8 J	9.27 U	54 U	9.13 U	39.7 J	8.43 U	38.1 J	42.5 J	51.4 J	35.4 J	66.2 U	13.1 U	34 J	52.7 J	62.4	12 U	74.7 U	68.2
Anthracene	ug/kg	85.3	1100	10.15	91	9.27 U	49.3 J	9.13 U	113	8.43 U	58.1 J	128	95.4	105	45.5 J	13.1 U	51.5 J	104	119	12 U	46.5 J	146
Benz(a)anthracene	ug/kg			51.32	423	8.61 J	196	9.13 U	449	5.46 J	230	377	358	327	250	9.75 J	264	511	475	12 U	229	530
Benzo(a)pyrene	ug/kg	430	1600	81.02	522	8.76 J	228	9.13 U	557	4.33 J	273	337	420	356	303	12.1 J	323	522	521	12 U	282	583
Benzo(b)fluoranthene	ug/kg			73.98	461	8.37 J	200	9.13 U	484	5.25 J	292	421	448	370	362	14.5	403	595	613	12 U	329	640
Benzo(ghi)perylene	ug/kg			67.76	435	7.01 J	179	9.13 U	445	8.43 U	251	286	369	306	271	10.7 J	294	439	445	12 U	258	515
Benzo(k)fluoranthene	ug/kg			81.50	455	5.78 J	180	9.13 U	380	8.43 U	307	293	425	368	276	11.1 J	287	488	479	12 U	292	570
Chrysene	ug/kg	384	2800	69.38	462	7.87 J	209	9.13 U	476	4.38 J	291	446	435	382	324	11.1 J	327	624	590	12 U	338	673
Dibenz(a,h)anthracene	ug/kg			13.70	89.2	9.27 U	40.8 J	9.13 U	91.8	8.43 U	58.3 J	62.6 J	75.4	62.6	62.1 J	13.1 U	65.6	89.4	100	12 U	51.5 J	116
Fluoranthene	ug/kg	600	5100	107.20	769	16.2	348	9.13 U	848	11.5	499	818	811	762	493	17.2	564	1110	1060	12 U	505	1250
Fluorene	ug/kg	19	540	3.81	37.2 J	9.27 U	54 U	9.13 U	42.7 J	8.43 U	34.2 J	97.1	53.8 J	42.3 J	66.2 U	13.1 U	65.6 U	55.9 J	83.4	12 U	74.7 U	92.6
Indeno(1,2,3-cd)Pyrene	ug/kg			66.98	488	10.6	235	4.56 J	461	7.57 J	302	317	421	360	331	16.7	352	520	498	6.13 J	309	547
Naphthalene	ug/kg	160	2100	9.40	92.9	9.27 U	41.2 J	9.13 U	97	8.43 U	121	947	90	122	62.4 J	13.7	76.2	75.2	190	12 U	37.5 J	152
Phenanthrene	ug/kg	240	1500	41.48	250	8.47 J	134	9.13 U	326	4.62 J	183	365	290	176	159	8.6 J	188	323	321	12 U	161	417
Pyrene	ug/kg	665	2600	112.40	893	16.2	431	9.13 U	1050	9.62	469	705	710	678	448	24.5	516	954	914	12 U	466	1070
Total LMW PAHs		552	3160	86	532.4	20.045 0	265 0	13.68 U	631.5 0	15.145 0	450.95 0	1661.9 0	620.6 0	526.9 0	316.55 0	35.38 0	382.5 0	662.2 0	827 0	17.97 U	301.1 0	942.8 0
Total HMW PAHs		1700	9600	725	4997.2	91.715 0	2246.8 0	25.08 0	5241.8 0	54.425 0	2972.3 0	4062.6 0	4472.4 0	3971.6 0	3120.1 0	130.92 0	3395.6 0	5852.4 0	5695 0	33.085 0	3059.5 0	6494 0
Total PAHs		4022	44792	811	5529.6	111.76 0	2511.8 0	38.76 0	5873.3 0	69.57 0	3423.25 0	5724.5 0	5093 0	4498.5 0	3436.65 0	166.3 0	3778.1 0	6514.6 0	6522 0	51.055 0	3360.6 0	7436.8 0
Polychlorinated Biphenyl Congeners (ug/kg)																						
PCB 8	ug/kg			0.05	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	1.31 U	1.25 J	0.635 J	0.689 J	1.33 U	0.677 U	1.26 U	1.36 U	0.669 J	0.665 U	1.54 U	1.59
PCB 18	ug/kg			0.03	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	1.68	2.98	1.25	2.38	1.33 U	0.677 U	1.26 U	1.44	1.55	0.665 U	0.797 J	3.16
PCB 28	ug/kg			0.24	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	2	3.96	1.03 J	1.49	0.776 J	0.677 U	1.01 J	1.36 U	2.42	0.665 U	0.937 J	2.64
PCB 44	ug/kg			0.03	0.803 J	0.985 U	0.594 J	0.966 U	0.636 J	0.883 U	3.75	9.98	2.75	4.83	1 J	0.677 U	1.24 J	0.779 J	3.83	0.665 U	0.899 J	6.54
PCB 49	x ug/kg			0.03	0.731 J	0.985 U	0.595 J	0.966 U	0.63 J	0.883 U	3.33	6.28	2.27	4.43	1.08 J	0.677 U	1.59	0.802 J	3.6	0.665 U	1.18 J	7.42
PCB 52	ug/kg			0.04	0.739 J	0.985 U	1.22	0.966 U	0.632 J	0.883 U	3.85	8.39	2.77	7	1.04 J	0.677 U	1.38	1.25 J	6.72	0.665 U	1.37 J	9.76
PCB 66	ug/kg			0.48	0.671 J	0.985 U	0.639 J	0.966 U	0.533 J	0.883 U	3.71	6.84	1.87	2.96	1.34	0.677 U	1.83	0.801 J	3.77	0.665 U	1.8	5.7
PCB 87	x ug/kg			0.03	1.14 U	0.985 U	1.06 J	0.966 U	0.538 J	0.883 U	1.7	4.3	0.976 J	1.56	1.33 U	0.677 U	0.872 J	1.43	1.98	0.665 U	0.996 J	3.14
PCB 101	ug/kg			0.27	1.27	0.985 U	2.26	0.966 U	1.09	0.883 U	5.91	13.7	3.3	6.01	2.4	0.37 J	3.08	2.66	5.58	0.665 U	2.51	10.6
PCB 105	ug/kg			0.07	1.14 U	0.985 U	0.882 J	0.966 U	1.05 U	0.883 U	1.15 J	3.07	1.2 U	1.16 U	1.33 U	0.677 U	0.752 J	0.918 J	1.18	0.665 U	1.54 U	3.14
PCB 118	ug/kg			0.32	1.01 J	0.985 U	1.81	0.966 U	1.06	0.883 U	4.89	9.47	2.11	3.82	1.6	0.677 U	2.59	2.37	3.78	0.665 U	2.18	9.02
PCB 128	ug/kg			0.04	1.14 U	0.985 U	0.567 J	0.966 U	0.577 J	0.883 U	2.02	3.32	0.984 J	1.66	0.986 J	0.677 U	1.06 J	0.963 J	0.737 J	0.665 U	0.913 J	2.01
PCB 138	ug/kg			0.40	1.53	0.985 U	3.15	0.966 U	1.43	0.883 U	6.5	14.1	3.53	6.11	2.48	0.435 J	3.51	3.38	5.31	0.665 U	3.37	12.8
PCB 153	ug/kg			0.68	1.37	0.985 U	2.24	0.966 U	1.16	0.883 U	6.01	11.5	3.39	5.26	2.24	0.354 J	2.82	2.48	4.88	0.665 U	2.84	10.4
PCB 170	ug/kg			0.03	1.14 U	0.985 U	0.584 J	0.966 U	1.05 U	0.883 U	2.6	4.38	1.42	1.89	0.912 J	0.677 U	0.711 J	1.36 U	2.67	0.665 U	1.02 J	2.84
PCB 180	ug/kg			0.19	0.883 J	0.985 U	1.32	0.966 U	0.793 J	0.883 U	3.52	7.12	2.12	2.52	1.28 J	0.677 U	1.62	1.54	3.03	0.665 U	1.66	5.24
PCB 183	x ug/kg			0.03	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	1.07 J	2.04	0.683 J	0.766 J	1.33 U	0.677 U	1.26 U	1.36 U	0.941 J	0.665 U	1.54 U	1.66
PCB 184	x ug/kg			0.07	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	1.31 U	1.32 U	1.2 U	1.16 U	1.33 U	0.677 U	1.26 U	1.36 U	1.13 U	0.665 U	1.54 U	1.26
PCB 187	ug/kg			0.19	0.757 J	0.985 U	0.89 J	0.966 U	0.752 J	0.883 U	3.2	6.78	1.76	2.43	1.07 J	0.677 U	1.4	0.922 J	2.17	0.665 U	1.52 J	5.56
PCB 195	ug/kg			0.03	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	1.03 J	0.812 J	1.2 U	1.16 U	1.33 U	0.677 U	1.26 U	1.36 U	1.13 U	0.665 U	1.54 U	0.692 J
PCB 206	ug/kg			0.23	0.638 J	0.985 U	1.12 U	0.966 U	0.602 J	0.883 U	1.44	2.46	0.995 J	0.922 J	1.33 U	0.677 U	0.847 J	1.36 U	1.02 J	0.665 U	1.15 J	1.66
PCB 209	ug/kg			0.03	1.14 U	0.985 U	1.12 U	0.966 U	1.05 U	0.883 U	0.884 J	1.01 J	0.62 J	1.16 U	1.33 U	0.677 U	1.26 U	1.36 U	1.13 U	0.665 U	1.54 U	0.848 J
NOAA Total PCBs		22.7	180	6.76	23.92	8.87	35.69	8.69	22.21	7.96	108.95	222.24	62.26	101.69	38.24	7.39	50.23	43.09	99.76	5.98	49.01	188.40

Green shaded values exceed the ERL, yellow shaded values excceed the ERM.
One-half of the sample-specific method detection limit (MDL) is used to represent non-detects in calculation of totals.
Total Polychlorinated Biphenyls (PCBs) calculated as the sum of the 18 NOAA congeners multiplied by 2.
J - Estimated value.
U - Not detected at the laboratory reporting limit (RL), values presented are the RL.
x – Congener is not one of the 18 NOAA congeners included in Total PCBs.

Appendix B

Biological Testing Results

10-Day Whole Sediment Bioassay

A. bahia percent survival results

	Replicate Survival at the End of 10-Day Exposure (%)					Mean Survival (%)	Statistically Less Than CLDS Reference?	Difference in Survival >20% Less Than CLDS Reference?
	A	B	C	D	E			
Lab Control	100%	100%	100%	90%	100%	98%	--	--
CLDS Reference	10%	30%	75%	100%	100%	63%	--	--
R'S'	95%	95%	95%	90%	85%	92%	No	No
Upstream	85%	95%	90%	100%	85%	91%	No	No
Downstream	95%	90%	90%	85%	95%	91%	No	No
Turning Basin	90%	95%	100%	90%	100%	95%	No	No
CAD Cell	90%	100%	100%	100%	90%	96%	No	No

L. plumulosus percent survival results

	Replicate Survival at the End of 10-Day Exposure (%)					Mean Survival (%)	Statistically Less Than CLDS Reference?	Difference in Survival >20% Less Than CLDS Reference?
	A	B	C	D	E			
Lab Control	95%	100%	100%	95%	100%	98%	--	--
CLDS Reference	95%	100%	100%	15%	85%	79%	--	--
R'S'	100%	90%	90%	90%	100%	94%	No	No
Upstream	95%	100%	90%	95%	100%	96%	No	No
Downstream	90%	95%	85%	95%	95%	92%	No	No
Turning Basin	100%	100%	95%	100%	100%	99%	No	No
CAD Cell	90%	95%	100%	90%	95%	90%	No	No

Elutriate Chemistry Results

Analyte		CLDS-REF		V', W'		R', S'		Upstream		Downstream		Turning Basin		CAD Cell	
Total Metals (mg/L)															
Arsenic, Total		0.00066		0.0394		0.038677		0.02935		0.03803		0.03354		0.02174	
Selenium, Total		0.00056	U	0.00029		0.00031		0.00018		0.00023		0.00020		0.00014	
Chromium, Hexavalent		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Cadmium, Total		0.00008		0.00003		0.00003		0.00002		0.00003		0.00004	U	0.00004	U
Chromium, Total		0.00019		0.00039		0.00092		0.00109		0.00069		0.00035		0.00031	
Copper, Total		0.00085		0.00077		0.00131		0.00053		0.00124		0.00027		0.00099	
Lead, Total		0.00073		0.00052		0.00107		0.00041		0.00100		0.00020		0.00044	
Nickel, Total		0.0007		0.00056		0.00061		0.00039		0.00044		0.00025		0.00035	
Silver, Total		0.00011		0.00008	U	0.00007		0.00008	U	0.00006		0.00006		0.00008	U
Zinc, Total		0.0014	J	0.00157		0.00219		0.00129		0.00225		0.002	U	0.00126	
Mercury, Total		0.00005	U	0.00005	U	0.00005	U	0.00005	U	0.00005	U	0.00005	U	0.00005	U
Organochlorine Pesticides (ug/L)															
4,4-DDT		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0011		0.0004	U	0.0005	U
Aldrin		0.001	U	0.001	U	0.001	U	0.0010	U	0.0014	U	0.0009	U	0.001	U
Chloropyrifos		0.001	U	0.001	U	0.001	U	0.0010	U	0.0014	U	0.0009	U	0.001	U
cis-Chlordane		0.0005	U	0.0007		0.0007		0.0041		0.0041		0.0011		0.0005	U
Dieldrin		0.0005	U	0.0011		0.0011		0.0007		0.0012		0.0004	U	0.0014	
Endosulfan I		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0009		0.0004	U	0.0005	U
Endosulfan II		0.0005	U	0.0009		0.0015		0.0025		0.0030		0.0011		0.0005	U
Endrin		0.0005	U	0.0005	U	0.0020		0.0005	U	0.0007	U	0.0004	U	0.0005	
gamma-BHC		0.0005	U	0.0028		0.0023		0.0005	U	0.0007	U	0.0004	U	0.0025	
Heptachlor		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0007	U	0.0004	U	0.0005	U
Heptachlor epoxide		0.001	U	0.001	U	0.001	U	0.001	U	0.0014	U	0.0009	U	0.001	U
Toxaphene		0.0263	U	0.025	U	0.0257	U	0.0251	U	0.0359	U	0.0247	U	0.0256	U
trans-Chlordane		0.0005	U	0.0010		0.0019		0.0005	U	0.0024		0.0008		0.0010	
Pentachlorophenol (ug/L)															
Pentachlorophenol		2.1	U	2.06	U	2.09	U	1.97	U	1.99	U	1.99	U	2.05	U
Polychlorinated Biphenyl Congeners (ug/L)															
PCB 8		0.0011	U	0.001	U	0.001	U	0.00100	U	0.00144	U	0.00099	U	0.001	U
PCB 18		0.0011	U	0.001	U	0.001		0.00111		0.00165		0.00099	U	0.001	U
PCB 28		0.0011	U	0.002		0.001		0.00097		0.00225		0.00099	U	0.001	U
PCB 44		0.0011	U	0.001		0.001		0.00100	U	0.00260		0.00099	U	0.001	U
PCB 49	x	0.0011	U	0.001		0.001	U	0.00142		0.00287		0.00099	U	0.001	U
PCB 52		0.0011	U	0.001		0.001		0.00239		0.00527		0.00079		0.001	U
PCB 66		0.0011	U	0.001		0.001	U	0.00124		0.00266		0.00099	U	0.001	U
PCB 87	x	0.0011	U	0.001	U	0.001	U	0.00100		0.00198		0.00099	U	0.001	U
PCB 101		0.0011	U	0.001		0.001	U	0.00178		0.00440		0.00056		0.001	U
PCB 105		0.0011	U	0.001		0.001		0.00100	U	0.00140		0.00099	U	0.001	U
PCB 118		0.0011	U	0.001		0.001	U	0.00157		0.00433		0.00080		0.001	U
PCB 128		0.0011	U	0.001	U	0.001	U	0.00100	U	0.00144	U	0.00099	U	0.001	U
PCB 138		0.0011	U	0.001		0.001		0.00185		0.00510		0.00066		0.001	U
PCB 153		0.0011	U	0.001		0.001	U	0.00159		0.00514		0.00066		0.001	U
PCB 170		0.0011	U	0.001	U	0.001	U	0.00090		0.00227		0.00099	U	0.001	U
PCB 180		0.0011	U	0.001		0.001	U	0.00138		0.00355		0.00087		0.001	U
PCB 183	x	0.0011	U	0.001	U	0.001	U	0.00085		0.00175		0.00099	U	0.001	U
PCB 184	x	0.0011	U	0.001	U	0.001	U	0.00100	U	0.00144	U	0.00099	U	0.001	U
PCB 187		0.0011	U	0.001	U	0.001	U	0.00115		0.00245		0.00099	U	0.001	U
PCB 195		0.0011	U	0.001	U	0.001	U	0.00100	U	0.00143		0.00099	U	0.001	U
PCB 206		0.0011	U	0.001	U	0.001	U	0.00088		0.00163		0.00099	U	0.001	U
PCB 209		0.0011	U	0.001	U	0.001	U	0.00100	U	0.00128		0.00099	U	0.001	U
Total PCBs		*0.009*	*U*	*0.025*		*0.022*		*0.026*		*0.078*		*0.013*		*0.018*	*U*

Results presented for composite samples are the mean of three replicate samples.
One-half of the sample-specific method detection limit (MDL) is used to represent non-detects in calculation of Total PCBs.
Total Polychlorinated Biphenyls (PCBs) calculated as the sum of the 18 NOAA congeners multiplied by 2.
B – Analyte found in laboratory blank.
J – Estimated value.
mg/L - Milligram per liter.
U – Not detected above the laboratory reporting limit (RL).
ug/L - Microgram per liter.
x – Congener is not one of the 18 NOAA congeners included in Total PCBs.

Summary of Ammonia Mitigation Data- Suspended Particulate Phase Tests

Composite ID	Hour	Date & Time Sampled	Temperature (°C)	pH (SU)	Salinity (‰)	Pore Water Ammonia (mg/L)	
						Total	Unionized
Comp V', W'	24	10/25/18 1000	18.9	7.46	30	38	0.3361
Comp V', W'	48	10/26/18 1000	20.0	7.71	30	14	0.2371
Comp V', W'	72	10/27/18 1350	20.3	7.44	30	15	0.1406
Comp V', W'	96	10/28/18 1145	17.0	7.43	30	7.8	0.0560
Comp V', W'	120	10/29/18 1130	19.5	7.37	32	5.2	0.0387
Comp R', S'	24	10/25/18 1000	18.4	7.59	30	27	0.3095
Comp R', S'	48	10/26/18 1000	20.0	7.64	30	15	0.2168
Comp R', S'	72	10/27/18 1350	19.8	7.43	30	16	0.1413
Comp R', S'	96	10/28/18 1145	17.0	7.37	32	8.4	0.0520
Comp R', S'	120	10/29/18 1130	19.7	7.39	32	7.3	0.0577
Comp Upstream	24	10/27/18 1350	21.0	7.48	30	38	0.4108
Comp Upstream	48	10/28/18 1145	18.0	7.38	32	22	0.1499
Comp Upstream	72	10/29/18 1130	19.8	7.44	32	14	0.1250
Comp Upstream	96	10/30/18 0915	13.8	7.39	32	8	0.0409
Comp Downstream	24	10/27/18 1350	20.0	7.61	30	31.8	0.4293
Comp Downstream	48	10/28/18 1145	18.0	7.56	32	15	0.1542
Comp Downstream	72	10/29/18 1130	19.9	7.51	32	13	0.1372
Comp Downstream	96	10/30/18 0915	13.5	7.54	32	6.6	0.0465
Comp Turning Basin	24	10/25/18 1000	20.0	7.70	30	31	0.5132
Comp Turning Basin	48	10/27/18 1350	20.0	7.38	30	18	0.1439
Comp Turning Basin	72	10/28/18 1145	18.0	7.39	30	13	0.0917
Comp Turning Basin	96	10/29/18 1130	20.0	7.35	32	13	0.0959
Comp CAD Cell	24	10/26/18 1000	18.9	7.92	30	12	0.3011
Comp CAD Cell	48	10/26/18 1000	20.0	7.62	30	5.5	0.0760
Comp CAD Cell	72	10/27/18 1350	20.0	7.63	31	4.2	0.0590
Comp CAD Cell	96	10/28/18 1145	19.0	7.55	32	3	0.0325
Comp CAD Cell	120	10/29/18 1130	20.0	7.58	32	3	0.0374

Suspended Particulate Phase Testing – Bioassay Findings

Sample ID	*A. bahia*	*M. beryllina*	*A. punctulata*	
	LC50 (%)	LC50 (%)	LC50 (%)	EC50 (%)
Unmitigated Assays				
V', W' Elutriate	>100%	65%	7%	4%
R', S' Elutriate	>100%	57%	13%	4%
Upstream Elutriate	74%	58%	3%	3%
Downstream Elutriate	>100%	69%	10%	7%
Turning Basin Elutriate	73%	56%	5%	4%
CAD Cell Elutriate	>100%	>100%	22%	22%
Mitigated Assays				
V', W' Elutriate	>100%	>100%	>100%	>100%
R', S' Elutriate	>100%	>100%	>100%	>100%
Upstream Elutriate	>100%	>100%	>100%	>100%
Downstream Elutriate	>100%	>100%	>100%	>100%
Turning Basin Elutriate	>100%	>100%	>100%	>100%
CAD Cell Elutriate	>100%	>100%	>100%	>100%

Americamysis bahia – survival endpoint
Menidia beryllina – survival endpoint
Arbacia punctulata – survival and development endpoints

Appendix C

Tissue Chemistry Results and BEST Model Results

Tissue Analysis – Mean Chemical Concentrations and Statistical Findings for *M. nasuta* Tissue

Analyte	CLDS Reference	Composite 2 R',S'	Composite 3 Upstream	Composite 4 Downstream	Composite 5 Turning Basin	Composite 6 CAD Cell
Total Metals (mg/kg)						
Arsenic	2.3	1.9 NS	2.3 NS	1.8 NS	1.8 NS	1.7 NS
Cadmium	0.024 b	0.030 bS	0.027 bNS	0.025 bNS	0.026 bNS	0.028 bNS
Chromium	0.49 b	0.47 NS	0.38 bNS	0.46 NS	0.32 bNS	0.49 NS
Copper	1.9	2.1 NS	2.1 NS	2.2 NS	1.5 NS	2.2 NS
Lead	0.46	0.45 NS	0.40 NS	0.40 NS	0.31 NS	0.61 S
Mercury	0.0064 b	0.0031 abNS	0.0018 abNS	0.0023 abNS	0.0020 abNS	0.0074 bNS
Nickel	0.42	0.34 NS	0.36 NS	0.33 NS	0.32 NS	0.35 NS
Zinc	9.4	9.8 NS	10.7 NS	9.1 NS	8.8 NS	9.6 NS
Polycyclic Aromatic Hydrocarbons (ug/kg)						
Acenaphthene	2.3 a	2.3 ac	2.7 abc	2.3 ac	2.3 ac	2.4 ac
Acenaphthylene	2.3 a	2.3 ac	2.2 ac	2.3 ac	2.3 ac	2.4 ac
Anthracene	2.3 a	3.7 abc	7.4 bc	6.6 bc	2.3 ac	4.4 abc
Benzo(a)anthracene	3.6 ab	18 S	24 S	23 S	7.5 bS	28 S
Benzo(a)pyrene	2.3 a	7.7 bc	8.9 bc	9.6 bc	2.7 abc	17 c
Benzo(b)fluoranthene	2.8 ab	16 S	17 S	17 S	7.8 bS	23 S
Benzo(k)fluoranthene	2.3 a	8.2 bc	11 bc	11 bc	4.4 abc	17 c
Benzo(g,h,i)perylene	2.3 a	2.3 ac	3.8 abc	4.2 abc	2.3 ac	7.6 bc
Chrysene	2.8 ab	17 S	23 S	24 S	7.6 bS	30 S
Dibenzo(a,h)anthracene	2.3 a	2.3 ac	2.2 ac	2.3 ac	2.3 ac	2.4 ac
Fluoranthene	6.3 ab	55 S	98 S	83 S	29 S	78 S
Fluorene	2.3 a	2.3 ac	2.2 ac	2.3 ac	2.3 ac	2.4 ac
Indeno(1,2,3-c,d)pyrene	2.3 a	2.3 ac	2.7 abc	2.8 abc	2.3 ac	5.0 abc
Naphthalene	2.3 a	2.3 ac	2.2 ac	2.3 ac	2.3 ac	2.4 ac
Phenanthrene	4.2 ab	12.0 S	16 S	22 S	6.9 bS	11 bS
Pyrene	9.1 b	45 S	72 S	64 S	23 S	113 S
Total LMW PAHs [1]						
Total HMW PAHs [1]						
Total PAHs [1]	52	200	297	278	107	345
Polychlorinated Biphenyl Congeners (ug/kg)						
PCB 8	0.23 a	0.40 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 18	0.23 a	0.90 ac	1.8 c	1.5 c	0.62 ac	0.52 ac
PCB 28	0.23 a	2.2 abc	0.61 abc	0.80 bc	0.23 ac	0.24 ac
PCB 44	0.23 a	0.40 abc	0.35 abc	0.60 abc	0.23 ac	0.24 ac
PCB 52	0.23 a	1.2 c	1.4 c	1.8 c	0.23 ac	0.24 ac
PCB 66	0.23 a	0.63 bc	0.56 bc	0.90 bc	0.23 ac	0.24 ac
PCB 101	0.23 a	1.2 c	0.83 bc	1.4 c	0.38 abc	0.30 abc
PCB 105	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 118	0.23 a	0.61 bc	0.42 abc	0.90 bc	0.28 abc	0.29 abc
PCB 128	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 138	0.23 a	0.82 bc	0.72 bc	1.2 bc	0.33 abc	0.31 abc
PCB 153	0.23 a	0.79 bc	0.69 bc	1.0 bc	0.32 abc	0.28 abc
PCB 170	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 180	0.23 a	0.23 ac	0.22 ac	0.30 abc	0.23 ac	0.24 ac
PCB 187	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 195	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 206	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
PCB 209	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Total PCBs [1]	8.3	22	19	24	10	10
Pesticides (ug/kg)						
Aldrin	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
cis-Chlordane	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.30 ac	0.24 ac
trans-Chlordane	0.23 a	0.23 ac	2.1 c	1.5 c	1.0 ac	0.24 ac
cis-Nonachlor	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
trans-Nonachlor	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Oxychlordane	0.46 a	0.62 ac	0.56 ac	0.45 ac	0.46 ac	0.47 ac
Total Chlordanes	1.4	1.5	3.3	2.6	2.2	1.4
4,4'-DDT	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.29 ac	0.24 ac
4,4'-DDD	0.23 a	0.23 ac	0.22 ac	0.28 ac	0.23 ac	0.24 ac
4,4'-DDE	0.33 a	0.73 S	0.70 S	0.91 S	0.35 aNS	0.24 aNS
Total DDT [1]	0.79	1.2	1.1	1.4	0.87	0.71
Dieldrin	0.23 a	0.23 ac	0.22 ac	0.28 ac	0.23 ac	0.24 ac
alpha-Endosulfan	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
beta-Endosulfan	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Endosulfans [1]	0.46	0.46	0.44	0.45	0.46	0.47
Endrin	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Heptachlor	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Heptachlor epoxide	0.46 a	0.46 ac	0.44 ac	0.45 ac	0.46 ac	0.47 ac
Hexachlorobenzene	0.46 a	0.46 ac	0.44 ac	0.45 ac	0.46 ac	0.47 ac
Lindane	0.23 a	0.23 ac	0.22 ac	0.23 ac	0.23 ac	0.24 ac
Methoxychlor	0.93 a	0.92 ac	0.89 ac	0.91 ac	0.91 ac	0.94 ac
Toxaphene	12 a	12 ac	11 ac	11 ac	11 ac	12 ac

Results presented for CLDS Reference and Composites are the mean of five replicate samples.

1 - Totals calculated for informational purposes only using 1/2 MDL for non-detected values. Statistical analysis not conducted on total values and qualifiers not applied.

Statistical qualifiers -

a - Analyte not detected (below MDL) in at least one replicate; mean value was calculated using one-half the MDL for the non-detect.

b - Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.

c - Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS - Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at α=0.05.

S - Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at α=0.05

Tissue Analysis – Mean Chemical Concentrations and Statistical Findings for *N. virens* Tissue

Analyte	CLDS Reference	Composite 2 R',S'	Composite 3 Upstream	Composite 4 Downstream	Composite 5 Turning Basin	Composite 6 CAD Cell
Total Metals (mg/kg)						
Arsenic	1.5	1.3 NS	1.5 NS	1.4 NS	1.4 NS	1.5 NS
Cadmium	0.029 b	0.028 bNS	0.029 bNS	0.028 bNS	0.022 bNS	0.024 bNS
Chromium	0.073 b	0.061 bNS	0.071 bNS	0.063 bNS	0.077 bNS	0.079 bNS
Copper	1.2	0.92 NS	1.1 NS	1.1 NS	1.1 NS	1.4 S
Lead	0.17	0.17 NS	0.19 NS	0.17 NS	0.13 NS	0.15 NS
Mercury	0.0016 a	0.0016 ac	0.0048 abc	0.0047 abc	0.0072 bc	0.0090 bc
Nickel	0.12	0.10 bNS	0.11 NS	0.13 NS	0.12 bNS	0.15 NS
Zinc	10.4	10.1 NS	6.7 NS	10.7 NS	13.6 NS	14.1 NS
Polycyclic Aromatic Hydrocarbons (ug/kg)						
Acenaphthene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Acenaphthylene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Anthracene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Benzo(a)anthracene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Benzo(a)pyrene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Benzo(b)fluoranthene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Benzo(k)fluoranthene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Benzo(g,h,i)perylene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Chrysene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Dibenzo(a,h)anthracene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Fluoranthene	2.3 a	4.4 abc	6.9 abc	6.9 abc	2.4 ac	6.0 bc
Fluorene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Indeno(1,2,3-c,d)pyrene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Naphthalene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Phenanthrene	2.3 a	2.3 ac	2.3 ac	2.2 ac	2.4 ac	2.3 ac
Pyrene	2.3 a	2.9 abc	4.7 abc	5.1 abc	2.4 ac	8.3 bc
Total LMW PAHs [1]						
Total HMW PAHs [1]						
Total PAHs [1]	37	39	44	44	38	47
Polychlorinated Biphenyl Congeners (ug/kg)						
PCB 8	0.23 a	0.23 ac	0.23 ac	0.52 ac	0.24 ac	0.23 ac
PCB 18	0.23 a	0.39 ac	0.23 ac	1.1 ac	0.24 ac	0.88 ac
PCB 28	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 44	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 52	0.23 a	0.63 bc	0.31 abc	0.98 bc	0.24 ac	0.23 ac
PCB 66	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 101	0.23 a	0.36 abc	0.46 abc	0.78 abc	0.32 abc	0.23 ac
PCB 105	0.23 a	0.28 abc	0.31 abc	0.22 ac	0.24 ac	0.23 ac
PCB 118	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 128	0.23 a	0.28 abc	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 138	1.1 b	1.9 S*	1.8 NS	2.6 S*	1.5 bNS	1.1 bNS
PCB 153	1.7	3.1 NS	3.0 NS	3.8 S*	2.5 NS	1.9 NS
PCB 170	0.40 ab	1.1 abNS	0.94 abNS	1.1 aNS	0.91 abS	0.23 aNS
PCB 180	1.4 b	3.1 S*	2.8 NS	3.3 NS	2.2 bNS	1.2 bNS
PCB 187	1.0 b	1.9 bNS	1.9 NS	2.4 S*	1.4 abNS	0.85 abNS
PCB 195	0.23 a	0.23 ac	0.33 abc	0.22 ac	0.24 ac	0.23 ac
PCB 206	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
PCB 209	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
Total PCBs [1]	17	30	28	37	23	18
Pesticides (ug/kg)						
Aldrin	0.23 a	0.23 ac	0.23 ac	0.28 ac	0.24 ac	0.23 ac
cis-Chlordane	0.23 a	0.23 ac	0.23 ac	0.49 ac	0.24 ac	0.23 ac
trans-Chlordane	0.23 a	0.23 ac	0.29 ac	0.40 ac	0.24 ac	0.23 ac
cis-Nonachlor	0.23 a	0.23 ac	0.23 ac	0.48 ac	0.24 ac	0.23 ac
trans-Nonachlor	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
Oxychlordane	0.46 a	0.46 ac	0.47 ac	0.45 ac	0.48 ac	0.47 ac
Total Chlordanes	1.4	1.4	1.5	2.0	1.4	1.4
4,4'-DDT	0.23 a	0.43 ac	0.23 ac	0.63 ac	0.24 ac	0.23 ac
4,4'-DDD	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
4,4'-DDE	0.23 a	0.23 ac	0.28 ac	0.22 ac	0.24 ac	0.23 ac
Total DDT [1]	0.69	0.89	0.75	1.1	0.71	0.70
Dieldrin	0.23 a	0.23 ac	0.23 ac	0.66 ac	0.24 ac	0.23 ac
alpha-Endosulfan	0.23 a	0.23 ac	0.23 ac	0.50 ac	0.24 ac	0.23 ac
beta-Endosulfan	0.23 a	0.23 ac	0.23 ac	0.45 ac	0.24 ac	0.23 ac
Endosulfans [1]	0.46	0.46	0.47	0.94	0.48	0.47
Endrin	0.23 a	0.23 ac	0.23 ac	0.22 ac	0.24 ac	0.23 ac
Heptachlor	0.23 a	0.23 ac	0.23 ac	0.31 ac	0.24 ac	0.23 ac
Heptachlor epoxide	0.46 a	0.46 ac	0.47 ac	0.45 ac	0.48 ac	0.47 ac
Hexachlorobenzene	0.46 a	0.46 ac	0.47 ac	1.30 ac	0.48 ac	0.47 ac
Lindane	0.23 a	0.23 ac	0.23 ac	0.67 ac	0.24 ac	0.23 ac
Methoxychlor	0.92 a	0.91 ac	0.94 ac	0.90 ac	0.95 ac	0.93 ac
Toxaphene	12 a	11 ac	12 ac	11 ac	12 ac	12 ac

Results presented for CLDS Reference and Composites are the mean of five replicate samples.

1 - Totals calculated for informational purposes only using 1/2 MDL for non-detected values. Statistical analysis not conducted on total values and qualifiers not applied.

Statistical qualifiers -

a - Analyte not detected (below MDL) in at least one replicate; mean value was calculated using one-half the MDL for the non-detect.

b - Analyte estimated (detected below RL but above MDL) in at least one replicate; mean value calculated using estimated value.

c - Analyte was detected in the treatment tissue sample replicates at an equal or higher mean concentration than in the associated reference site tissue, however statistical analysis is not required as the analyte was not detected in any of the reference site replicates.

NS - Not Significant - mean tissue body burden was not statistically different from the associated reference site mean body burden. Statistical significance accepted at α=0.05.

S - Significant - mean tissue body burden was statistically different, greater than the associated reference site mean body burden. Statistical significance accepted at α=0.05

* - Mean tissue body burden was not statistically different from the native organism mean body burden. Statistical significance accepted at α=0.05.

Project name: New Haven 2018 Supplemental S&T

Project number:

Model filename: NewHaven2018_S.best

Chemical filename: Chemical_List_for_EPA_Reg1_template (in progress).xlsx

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- Seafood Non-Cancer Risk 13
- FDA Action Limit/Tolerance 15
- Ecological Effect Level 17
- FDA Level of Concern 23

Selected Chemicals

Invertebrate Name Macoma nasuta

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
101					
105					
118					
1234678 HpDD					
1234678-HpCDD					
1234678-HpCDF					
123478-HxCDD					
123478-HxCDF					
123478-HxDD					
1234789-HpCDF					
123678-HxCDD					
123678-HxCDF					
123678-HxDD					
12378 PeCDD					
12378-PeCDF					
123789-HxCDD					
123789-HxCDF					
123789-HxDD					
128					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
138					
153					
170					
18					
180					
187					
195					
206					
209					
234678-HxCDF					
23478-PeCDF					
2378 TCDD					
2378-TCDF					
28					
4,4'-DDD					
4,4'-DDE	X	X	X		
4,4'-DDT					
44					
52					
66					
8					
Acenaphthene					
Acenaphthylene					
Aldrin					
Aldrin+Dieldrin					
Anthracene					
Arsenic					
Benzo(a)anthracene	X	X	X	X	X
Benzo(a)pyrene					
Benzo(a)pyrene TEQ					
Benzo(b)fluoranthene	X	X	X	X	X
Benzo(g,h,i)perylene					
Benzo(k)fluoranthene					
Cadmium	X				
Chlordane+Heptachlo					
Chromium					
Chrysene	X	X	X	X	X
Copper					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
DIOXINS/FURANS					
Dibenzo(a,h)					
Dieldrin					
Dioxin					
Endosulfans					
Endrin					
Fluoranthene	X	X	X	X	X
Fluorene					
Heptachlor					
Heptachlor epoxide					
Heptachlor+Heptachlo					
Hexachlorobenzene					
Indeno(1,2,3-c,d)					
Lead					X
Lindane					
Lv - Phenanthrene					
METALS					
Mercury					
Methoxychlor					
Mirex					
Naphthalene					
Nickel					
OCDD					
OCDF					
Oxychlordane					
PAH Total					
PAHS					
PCB 101					
PCB 105					
PCB 118					
PCB 128					
PCB 138					
PCB 153					
PCB 170					
PCB 18					
PCB 180					
PCB 187					
PCB 195					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
PCB 206					
PCB 209					
PCB 28					
PCB 44					
PCB 52					
PCB 66					
PCB 8					
PCB Congeners					
PCB-105					
PCB-114					
PCB-118					
PCB-123					
PCB-126					
PCB-156					
PCB-157					
PCB-167					
PCB-169					
PCB-189					
PCB-77					
PCB-81					
PESTICIDES					
Phenanthrene	X	X	X	X	X
Pyrene	X	X	X	X	X
Silver					
Total Chlordanes					
Total DDT					
Total PCBs					
Toxaphene					
Zinc					
alpha-Endosulfan					
beta-Endosulfan					
bis (2-ethylhexyl)					
cis-Chlordane					
cis-Nonachlor					
trans-Chlordane		X			
trans-Nonachlor					

Selected Chemicals

Invertebrate Name Nereis virens

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
101					
105					
118					
1234678 HpDD					
1234678-HpCDD					
1234678-HpCDF					
123478-HxCDD					
123478-HxCDF					
123478-HxDD					
1234789-HpCDF					
123678-HxCDD					
123678-HxCDF					
123678-HxDD					
12378 PeCDD					
12378-PeCDF					
123789-HxCDD					
123789-HxCDF					
123789-HxDD					
128					
138					
153					
170					
18					
180					
187					
195					
206					
209					
234678-HxCDF					
23478-PeCDF					
2378 TCDD					
2378-TCDF					
28					
4,4'-DDD					
4,4'-DDE					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
4,4'-DDT					
44					
52					
66					
8					
Acenaphthene					
Acenaphthylene					
Aldrin					
Aldrin+Dieldrin					
Anthracene					
Arsenic					
Benzo(a)anthracene					
Benzo(a)pyrene					
Benzo(a)pyrene TEQ					
Benzo(b)fluoranthene					
Benzo(g,h,i)perylene					
Benzo(k)fluoranthene					
Cadmium					
Chlordane+Heptachlo					
Chromium					
Chrysene					
Copper					X
DIOXINS/FURANS					
Dibenzo(a,h)					
Dieldrin					
Dioxin					
Endosulfans					
Endrin					
Fluoranthene					
Fluorene					
Heptachlor					
Heptachlor epoxide					
Heptachlor+Heptachlo					
Hexachlorobenzene					
Indeno(1,2,3-c,d)					
Lead					
Lindane					
Lv - Phenanthrene					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
METALS					
Mercury					
Methoxychlor					
Mirex					
Naphthalene					
Nickel					
OCDD					
OCDF					
Oxychlordane					
PAH Total					
PAHS					
PCB 101					
PCB 105					
PCB 118					
PCB 128					
PCB 138					
PCB 153					
PCB 170					
PCB 18					
PCB 180					
PCB 187					
PCB 195					
PCB 206					
PCB 209					
PCB 28					
PCB 44					
PCB 52					
PCB 66					
PCB 8					
PCB Congeners					
PCB-105					
PCB-114					
PCB-118					
PCB-123					
PCB-126					
PCB-156					
PCB-157					
PCB-167					

	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
PCB-169					
PCB-189					
PCB-77					
PCB-81					
PESTICIDES					
Phenanthrene					
Pyrene					
Silver					
Total Chlordanes					
Total DDT					
Total PCBs					
Toxaphene					
Zinc					
alpha-Endosulfan					
beta-Endosulfan					
bis (2-ethylhexyl)					
cis-Chlordane					
cis-Nonachlor					
trans-Chlordane					
trans-Nonachlor					

Human Subreport

Human: Adult Angler

Total Estimated Risks From Organics(see EPA Table Xa)

Receptor: Adult Angler

Organism: Macoma nasuta

		Cancer Risk	Non-Cancer Risk
Composite 2 (R',S')		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	5.13E-6	4.72E-4
	Reference	1.45E-6	1.75E-4
		Total Lobster	
	Test	2.65E-5	2.44E-3
	Reference	7.49E-6	9E-4

		Cancer Risk	Non-Cancer Risk
		Macoma nasuta	
	Test	5.28E-6	5.19E-4
	Reference	1.5E-6	1.9E-4
Composite 3 (US-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	6.2E-6	7.16E-4
	Reference	1.47E-6	1.75E-4
		Total Lobster	
	Test	3.2E-5	3.7E-3
	Reference	7.57E-6	9E-4
		Macoma nasuta	
	Test	6.42E-6	7.91E-4
	Reference	1.51E-6	1.9E-4
Composite 4 (DS-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	5.79E-6	6.86E-4
	Reference	1.45E-6	1.75E-4
		Total Lobster	
	Test	2.99E-5	3.54E-3
	Reference	7.49E-6	9E-4
		Macoma nasuta	
	Test	5.98E-6	7.56E-4
	Reference	1.5E-6	1.9E-4
Composite 5 (TB-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	2.46E-6	1.55E-4
	Reference	1.43E-6	5.26E-5
		Total Lobster	
	Test	1.27E-5	7.97E-4
	Reference	7.39E-6	2.72E-4

		Cancer Risk	Non-Cancer Risk
		Macoma nasuta	
	Test	2.53E-6	1.73E-4
	Reference	1.47E-6	5.9E-5
Composite 6 (CAD-1,-2,-3)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	8.7E-6	7E-4
	Reference	1.43E-6	5.26E-5
		Total Lobster	
	Test	4.49E-5	3.61E-3
	Reference	7.39E-6	2.72E-4
		Macoma nasuta	
	Test	8.98E-6	7.85E-4
	Reference	1.47E-6	5.9E-5

Total Estimated Risks From Organics(see EPA Table Xa)

Receptor: Adult Angler

Organism: Nereis virens

		Cancer Risk	Non-Cancer Risk
Composite 2 (R',S')		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	0	0
	Reference	0	0
		Total Lobster	
	Test	0	0
	Reference	0	0
		Macoma nasuta	
	Test	0	0
	Reference	0	0
Composite 3 (US-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	0	0
	Reference	0	0
		Total Lobster	
	Test	0	0
	Reference	0	0
		Macoma nasuta	
	Test	0	0
	Reference	0	0
Composite 4 (DS-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	0	0
	Reference	0	0

		Cancer Risk	Non-Cancer Risk
		Total Lobster	
	Test	0	0
	Reference	0	0
		Macoma nasuta	
	Test	0	0
	Reference	0	0
Composite 5 (TB-1,-2)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	0	0
	Reference	0	0
		Total Lobster	
	Test	0	0
	Reference	0	0
		Macoma nasuta	
	Test	0	0
	Reference	0	0
Composite 6 (CAD-1,-2,-3)		Nereis virens	
	Test	0	0
	Reference	0	0
		Fish Fillet	
	Test	0	0
	Reference	0	0
		Total Lobster	
	Test	0	0
	Reference	0	0
		Macoma nasuta	
	Test	0	0
	Reference	0	0

Seafood Non-Cancer Risks (see EPA Table 6a, Columns F & G)

Receptor: Adult Angler

Organism: Macoma nasuta

			Non-Cancer Risk
Composite 2 (R',S')	Cadmium	Test	2.13E-3
		Reference	2.09E-3
Composite 6 (CAD-1,-2,-3)	Lead	Test	0
		Reference	0

Seafood Non-Cancer Risks (see EPA Table 6a, Columns F & G)

Receptor: Adult Angler

Organism: Nereis virens

			Non-Cancer Risk
Composite 6 (CAD-1,-2,-3)	Copper	Test	0
		Reference	0

FDA Action Limit/Tolerance (see EPA Table 3, Columns D & E)

Receptor: Adult Angler

Organism: Macoma nasuta

	Contaminant	FDA Action Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Total PCBs	2E3	4.09E1
Composite 2 (R',S')	Mercury	1E0	2.3E-3
Composite 2 (R',S')	Total DDT	5E3	1.57E0
Composite 2 (R',S')	Total Chlordanes	3E2	1.83E0
Composite 3 (US-1,-2)	Total PCBs	2E3	4.16E1
Composite 3 (US-1,-2)	Mercury	1E0	1.8E-3
Composite 3 (US-1,-2)	Total DDT	5E3	1.86E0
Composite 3 (US-1,-2)	Total Chlordanes	3E2	5.8E0
Composite 4 (DS-1,-2)	Total PCBs	2E3	5.4E1
Composite 4 (DS-1,-2)	Mercury	1E0	2.3E-3
Composite 4 (DS-1,-2)	Total DDT	5E3	2.3E0
Composite 4 (DS-1,-2)	Total Chlordanes	3E2	4.51E0
Composite 5 (TB-1,-2)	Total PCBs	2E3	2.17E1
Composite 5 (TB-1,-2)	Mercury	1E0	2E-3
Composite 5 (TB-1,-2)	Total DDT	5E3	1.44E0
Composite 5 (TB-1,-2)	Total Chlordanes	3E2	3.77E0
Composite 6 (CAD-1,-2,	Total PCBs	2E3	2.11E1
Composite 6 (CAD-1,-2,	Mercury	1E0	7.4E-3
Composite 6 (CAD-1,-2,	Total DDT	5E3	1.19E0
Composite 6 (CAD-1,-2,	Total Chlordanes	3E2	2.12E0

FDA Action Limit/Tolerance (see EPA Table 3, Columns D & E)

Receptor: Adult Angler

Organism: Nereis virens

	Contaminant	FDA Action Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Total PCBs	2E3	5.85E1
Composite 2 (R',S')	Mercury	1E0	1.3E-3
Composite 2 (R',S')	Total DDT	5E3	1.25E0
Composite 2 (R',S')	Total Chlordanes	3E2	1.67E0
Composite 3 (US-1,-2)	Total PCBs	2E3	6.23E1
Composite 3 (US-1,-2)	Mercury	1E0	4.84E-3
Composite 3 (US-1,-2)	Total DDT	5E3	1.26E0
Composite 3 (US-1,-2)	Total Chlordanes	3E2	2.22E0
Composite 4 (DS-1,-2)	Total PCBs	2E3	8.2E1
Composite 4 (DS-1,-2)	Mercury	1E0	4.73E-3
Composite 4 (DS-1,-2)	Total DDT	5E3	1.76E0
Composite 4 (DS-1,-2)	Total Chlordanes	3E2	3.15E0
Composite 5 (TB-1,-2)	Total PCBs	2E3	5.16E1
Composite 5 (TB-1,-2)	Mercury	1E0	7.2E-3
Composite 5 (TB-1,-2)	Total DDT	5E3	1.21E0
Composite 5 (TB-1,-2)	Total Chlordanes	3E2	2.14E0
Composite 6 (CAD-1,-2,	Total PCBs	2E3	3.99E1
Composite 6 (CAD-1,-2,	Mercury	1E0	9E-3
Composite 6 (CAD-1,-2,	Total DDT	5E3	1.18E0
Composite 6 (CAD-1,-2,	Total Chlordanes	3E2	2.1E0

Ecological Effects Level (see EPA Table 8a.1, Columns D & E)

Receptor: Adult Angler

Organism: Macoma nasuta

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Anthracene	3.75E3	2.82E0
Composite 2 (R',S')	PAH Total	1E4	1.57E2
Composite 2 (R',S')	Total PCBs	4E3	4.09E1
Composite 2 (R',S')	Aldrin	2.99E2	1.86E-1
Composite 2 (R',S')	Dieldrin	4.37E0	2.51E-1
Composite 2 (R',S')	Endosulfans	2.86E0	3.72E-1
Composite 2 (R',S')	Arsenic	1.26E1	1.49E0
Composite 2 (R',S')	Cadmium	3.03E0	2.48E-2
Composite 2 (R',S')	Chromium	1.18E1	3.81E-1
Composite 2 (R',S')	Copper	9.6E0	1.67E0
Composite 2 (R',S')	Lead	1.19E1	3.64E-1
Composite 2 (R',S')	Mercury	2E-1	2.3E-3
Composite 2 (R',S')	Nickel	3.8E0	2.79E-1
Composite 2 (R',S')	Zinc	1.52E3	8.3E0
Composite 2 (R',S')	Total DDT	3E3	1.57E0
Composite 3 (US-1,-2)	Anthracene	3.75E3	7.44E0
Composite 3 (US-1,-2)	PAH Total	1E4	2.97E2
Composite 3 (US-1,-2)	Total PCBs	4E3	4.16E1
Composite 3 (US-1,-2)	Aldrin	2.99E2	2.22E-1
Composite 3 (US-1,-2)	Dieldrin	4.37E0	3E-1
Composite 3 (US-1,-2)	Endosulfans	2.86E0	4.44E-1
Composite 3 (US-1,-2)	Arsenic	1.26E1	2.31E0
Composite 3 (US-1,-2)	Cadmium	3.03E0	2.72E-2
Composite 3 (US-1,-2)	Chromium	1.18E1	3.84E-1
Composite 3 (US-1,-2)	Copper	9.6E0	2.07E0
Composite 3 (US-1,-2)	Lead	1.19E1	3.98E-1
Composite 3 (US-1,-2)	Mercury	2E-1	1.8E-3
Composite 3 (US-1,-2)	Nickel	3.8E0	3.56E-1
Composite 3 (US-1,-2)	Zinc	1.52E3	1.07E1
Composite 3 (US-1,-2)	Total DDT	3E3	1.86E0
Composite 4 (DS-1,-2)	Anthracene	3.75E3	6.65E0
Composite 4 (DS-1,-2)	PAH Total	1E4	2.78E2
Composite 4 (DS-1,-2)	Total PCBs	4E3	5.4E1
Composite 4 (DS-1,-2)	Aldrin	2.99E2	2.27E-1

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 4 (DS-1,-2)	Dieldrin	4.37E0	3.77E-1
Composite 4 (DS-1,-2)	Endosulfans	2.86E0	4.55E-1
Composite 4 (DS-1,-2)	Arsenic	1.26E1	1.84E0
Composite 4 (DS-1,-2)	Cadmium	3.03E0	2.54E-2
Composite 4 (DS-1,-2)	Chromium	1.18E1	4.64E-1
Composite 4 (DS-1,-2)	Copper	9.6E0	2.19E0
Composite 4 (DS-1,-2)	Lead	1.19E1	3.98E-1
Composite 4 (DS-1,-2)	Mercury	2E-1	2.3E-3
Composite 4 (DS-1,-2)	Nickel	3.8E0	3.32E-1
Composite 4 (DS-1,-2)	Zinc	1.52E3	9.09E0
Composite 4 (DS-1,-2)	Total DDT	3E3	2.3E0
Composite 5 (TB-1,-2)	Anthracene	3.75E3	2.29E0
Composite 5 (TB-1,-2)	PAH Total	1E4	1.07E2
Composite 5 (TB-1,-2)	Total PCBs	4E3	2.17E1
Composite 5 (TB-1,-2)	Aldrin	2.99E2	2.29E-1
Composite 5 (TB-1,-2)	Dieldrin	4.37E0	3.09E-1
Composite 5 (TB-1,-2)	Endosulfans	2.86E0	4.58E-1
Composite 5 (TB-1,-2)	Arsenic	1.26E1	1.85E0
Composite 5 (TB-1,-2)	Cadmium	3.03E0	2.62E-2
Composite 5 (TB-1,-2)	Chromium	1.18E1	3.23E-1
Composite 5 (TB-1,-2)	Copper	9.6E0	1.53E0
Composite 5 (TB-1,-2)	Lead	1.19E1	3.12E-1
Composite 5 (TB-1,-2)	Mercury	2E-1	2E-3
Composite 5 (TB-1,-2)	Nickel	3.8E0	3.15E-1
Composite 5 (TB-1,-2)	Zinc	1.52E3	8.83E0
Composite 5 (TB-1,-2)	Total DDT	3E3	1.44E0
Composite 6 (CAD-1,-2,	Anthracene	3.75E3	4.41E0
Composite 6 (CAD-1,-2,	PAH Total	1E4	3.45E2
Composite 6 (CAD-1,-2,	Total PCBs	4E3	2.11E1
Composite 6 (CAD-1,-2,	Aldrin	2.99E2	2.35E-1
Composite 6 (CAD-1,-2,	Dieldrin	4.37E0	3.17E-1
Composite 6 (CAD-1,-2,	Endosulfans	2.86E0	4.7E-1
Composite 6 (CAD-1,-2,	Arsenic	1.26E1	1.71E0
Composite 6 (CAD-1,-2,	Cadmium	3.03E0	2.8E-2
Composite 6 (CAD-1,-2,	Chromium	1.18E1	4.88E-1
Composite 6 (CAD-1,-2,	Copper	9.6E0	2.17E0
Composite 6 (CAD-1,-2,	Lead	1.19E1	6.07E-1

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 6 (CAD-1,-2,	Mercury	2E-1	7.4E-3
Composite 6 (CAD-1,-2,	Nickel	3.8E0	3.52E-1
Composite 6 (CAD-1,-2,	Zinc	1.52E3	9.65E0
Composite 6 (CAD-1,-2,	Total DDT	3E3	1.19E0

Ecological Effects Level (see EPA Table 8a.1, Columns D & E)

Receptor: Adult Angler

Organism: Nereis virens

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Anthracene	3.75E3	1.85E0
Composite 2 (R',S')	PAH Total	1E4	3.18E1
Composite 2 (R',S')	Total PCBs	4E3	5.85E1
Composite 2 (R',S')	Aldrin	2.99E2	1.85E-1
Composite 2 (R',S')	Dieldrin	4.37E0	2.5E-1
Composite 2 (R',S')	Endosulfans	2.86E0	3.7E-1
Composite 2 (R',S')	Arsenic	1.26E1	1.04E0
Composite 2 (R',S')	Cadmium	3.03E0	2.34E-2
Composite 2 (R',S')	Chromium	1.18E1	5.3E-2
Composite 2 (R',S')	Copper	9.6E0	7.61E-1
Composite 2 (R',S')	Lead	1.19E1	1.47E-1
Composite 2 (R',S')	Mercury	2E-1	1.3E-3
Composite 2 (R',S')	Nickel	3.8E0	8.74E-2
Composite 2 (R',S')	Zinc	1.52E3	9.12E0
Composite 2 (R',S')	Total DDT	3E3	1.25E0
Composite 3 (US-1,-2)	Anthracene	3.75E3	2.34E0
Composite 3 (US-1,-2)	PAH Total	1E4	4.43E1
Composite 3 (US-1,-2)	Total PCBs	4E3	6.23E1
Composite 3 (US-1,-2)	Aldrin	2.99E2	2.34E-1
Composite 3 (US-1,-2)	Dieldrin	4.37E0	3.16E-1
Composite 3 (US-1,-2)	Endosulfans	2.86E0	4.68E-1
Composite 3 (US-1,-2)	Arsenic	1.26E1	1.49E0
Composite 3 (US-1,-2)	Cadmium	3.03E0	2.94E-2
Composite 3 (US-1,-2)	Chromium	1.18E1	7.14E-2
Composite 3 (US-1,-2)	Copper	9.6E0	1.07E0
Composite 3 (US-1,-2)	Lead	1.19E1	1.92E-1
Composite 3 (US-1,-2)	Mercury	2E-1	4.84E-3
Composite 3 (US-1,-2)	Nickel	3.8E0	1.12E-1
Composite 3 (US-1,-2)	Zinc	1.52E3	6.65E0
Composite 3 (US-1,-2)	Total DDT	3E3	1.26E0
Composite 4 (DS-1,-2)	Anthracene	3.75E3	2.25E0
Composite 4 (DS-1,-2)	PAH Total	1E4	4.35E1
Composite 4 (DS-1,-2)	Total PCBs	4E3	8.2E1
Composite 4 (DS-1,-2)	Aldrin	2.99E2	2.84E-1

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 4 (DS-1,-2)	Dieldrin	4.37E0	8.89E-1
Composite 4 (DS-1,-2)	Endosulfans	2.86E0	9.44E-1
Composite 4 (DS-1,-2)	Arsenic	1.26E1	1.45E0
Composite 4 (DS-1,-2)	Cadmium	3.03E0	2.82E-2
Composite 4 (DS-1,-2)	Chromium	1.18E1	6.34E-2
Composite 4 (DS-1,-2)	Copper	9.6E0	1.14E0
Composite 4 (DS-1,-2)	Lead	1.19E1	1.69E-1
Composite 4 (DS-1,-2)	Mercury	2E-1	4.73E-3
Composite 4 (DS-1,-2)	Nickel	3.8E0	1.32E-1
Composite 4 (DS-1,-2)	Zinc	1.52E3	1.07E1
Composite 4 (DS-1,-2)	Total DDT	3E3	1.76E0
Composite 5 (TB-1,-2)	Anthracene	3.75E3	2.38E0
Composite 5 (TB-1,-2)	PAH Total	1E4	3.81E1
Composite 5 (TB-1,-2)	Total PCBs	4E3	5.16E1
Composite 5 (TB-1,-2)	Aldrin	2.99E2	2.38E-1
Composite 5 (TB-1,-2)	Dieldrin	4.37E0	3.22E-1
Composite 5 (TB-1,-2)	Endosulfans	2.86E0	4.76E-1
Composite 5 (TB-1,-2)	Arsenic	1.26E1	1.44E0
Composite 5 (TB-1,-2)	Cadmium	3.03E0	2.18E-2
Composite 5 (TB-1,-2)	Chromium	1.18E1	7.74E-2
Composite 5 (TB-1,-2)	Copper	9.6E0	1.12E0
Composite 5 (TB-1,-2)	Lead	1.19E1	1.33E-1
Composite 5 (TB-1,-2)	Mercury	2E-1	7.2E-3
Composite 5 (TB-1,-2)	Nickel	3.8E0	1.17E-1
Composite 5 (TB-1,-2)	Zinc	1.52E3	1.36E1
Composite 5 (TB-1,-2)	Total DDT	3E3	1.21E0
Composite 6 (CAD-1,-2,	Anthracene	3.75E3	2.33E0
Composite 6 (CAD-1,-2,	PAH Total	1E4	4.7E1
Composite 6 (CAD-1,-2,	Total PCBs	4E3	3.99E1
Composite 6 (CAD-1,-2,	Aldrin	2.99E2	2.33E-1
Composite 6 (CAD-1,-2,	Dieldrin	4.37E0	3.14E-1
Composite 6 (CAD-1,-2,	Endosulfans	2.86E0	4.66E-1
Composite 6 (CAD-1,-2,	Arsenic	1.26E1	1.54E0
Composite 6 (CAD-1,-2,	Cadmium	3.03E0	2.44E-2
Composite 6 (CAD-1,-2,	Chromium	1.18E1	7.94E-2
Composite 6 (CAD-1,-2,	Copper	9.6E0	1.39E0
Composite 6 (CAD-1,-2,	Lead	1.19E1	1.48E-1

	Contaminant	Ecological Effect Level (mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 6 (CAD-1,-2,	Mercury	2E-1	9E-3
Composite 6 (CAD-1,-2,	Nickel	3.8E0	1.52E-1
Composite 6 (CAD-1,-2,	Zinc	1.52E3	1.41E1
Composite 6 (CAD-1,-2,	Total DDT	3E3	1.18E0

FDA Level of Concern (see EPA Table 7a, Columns B & D)

Receptor: Adult Angler

Organism: Macoma nasuta

	Contaminant	FDA Level of Concern(mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Arsenic	8.6E1	1.49E0
Composite 2 (R',S')	Cadmium	3.7E0	2.48E-2
Composite 2 (R',S')	Chromium	1.3E1	3.81E-1
Composite 2 (R',S')	Lead	1.7E0	3.64E-1
Composite 2 (R',S')	Nickel	8E1	2.79E-1
Composite 3 (US-1,-2)	Arsenic	8.6E1	2.31E0
Composite 3 (US-1,-2)	Cadmium	3.7E0	2.72E-2
Composite 3 (US-1,-2)	Chromium	1.3E1	3.84E-1
Composite 3 (US-1,-2)	Lead	1.7E0	3.98E-1
Composite 3 (US-1,-2)	Nickel	8E1	3.56E-1
Composite 4 (DS-1,-2)	Arsenic	8.6E1	1.84E0
Composite 4 (DS-1,-2)	Cadmium	3.7E0	2.54E-2
Composite 4 (DS-1,-2)	Chromium	1.3E1	4.64E-1
Composite 4 (DS-1,-2)	Lead	1.7E0	3.98E-1
Composite 4 (DS-1,-2)	Nickel	8E1	3.32E-1
Composite 5 (TB-1,-2)	Arsenic	8.6E1	1.85E0
Composite 5 (TB-1,-2)	Cadmium	3.7E0	2.62E-2
Composite 5 (TB-1,-2)	Chromium	1.3E1	3.23E-1
Composite 5 (TB-1,-2)	Lead	1.7E0	3.12E-1
Composite 5 (TB-1,-2)	Nickel	8E1	3.15E-1
Composite 6 (CAD-1,-2,	Arsenic	8.6E1	1.71E0
Composite 6 (CAD-1,-2,	Cadmium	3.7E0	2.8E-2
Composite 6 (CAD-1,-2,	Chromium	1.3E1	4.88E-1
Composite 6 (CAD-1,-2,	Lead	1.7E0	6.07E-1
Composite 6 (CAD-1,-2,	Nickel	8E1	3.52E-1

FDA Level of Concern (see EPA Table 7a, Columns B & D)

Receptor: Adult Angler

Organism: Nereis virens

	Contaminant	FDA Level of Concern(mg/kg)	Steady State Corrected Mean Tissue Concentration (mg/kg)
Composite 2 (R',S')	Arsenic	8.6E1	1.04E0
Composite 2 (R',S')	Cadmium	3.7E0	2.34E-2
Composite 2 (R',S')	Chromium	1.3E1	5.3E-2
Composite 2 (R',S')	Lead	1.7E0	1.47E-1
Composite 2 (R',S')	Nickel	8E1	8.74E-2
Composite 3 (US-1,-2)	Arsenic	8.6E1	1.49E0
Composite 3 (US-1,-2)	Cadmium	3.7E0	2.94E-2
Composite 3 (US-1,-2)	Chromium	1.3E1	7.14E-2
Composite 3 (US-1,-2)	Lead	1.7E0	1.92E-1
Composite 3 (US-1,-2)	Nickel	8E1	1.12E-1
Composite 4 (DS-1,-2)	Arsenic	8.6E1	1.45E0
Composite 4 (DS-1,-2)	Cadmium	3.7E0	2.82E-2
Composite 4 (DS-1,-2)	Chromium	1.3E1	6.34E-2
Composite 4 (DS-1,-2)	Lead	1.7E0	1.69E-1
Composite 4 (DS-1,-2)	Nickel	8E1	1.32E-1
Composite 5 (TB-1,-2)	Arsenic	8.6E1	1.44E0
Composite 5 (TB-1,-2)	Cadmium	3.7E0	2.18E-2
Composite 5 (TB-1,-2)	Chromium	1.3E1	7.74E-2
Composite 5 (TB-1,-2)	Lead	1.7E0	1.33E-1
Composite 5 (TB-1,-2)	Nickel	8E1	1.17E-1
Composite 6 (CAD-1,-2,	Arsenic	8.6E1	1.54E0
Composite 6 (CAD-1,-2,	Cadmium	3.7E0	2.44E-2
Composite 6 (CAD-1,-2,	Chromium	1.3E1	7.94E-2
Composite 6 (CAD-1,-2,	Lead	1.7E0	1.48E-1
Composite 6 (CAD-1,-2,	Nickel	8E1	1.52E-1

Software version: BEST 4.0

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User name: RBL