

**SEARSPORT HARBOR
SEARSPORT, MAINE
NAVIGATION IMPROVEMENT PROJECT**

TECHNICAL REPORT 3

**FIELD SAMPLING
AND SEDIMENT TESTING**

September 2008



Contract No. DACW33-03-D-0004

Delivery Order No. 41

September 30, 2008

Final Report
**FIELD SAMPLING AND
SEDIMENT TESTING**

**Searsport Harbor
Federal Navigation Project
Searsport, Maine**



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FINAL REPORT

for

Field Sampling and Sediment Testing – Searsport Harbor, Searsport, Maine

Submitted to:

**Department of the Army
U.S. Army Corps of Engineers
North Atlantic Division
New England District**

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ATTACHMENTS

- Attachment A: Draft Field Sampling Report
- Attachment B: Composite Preparation Logs and Custody Records
- Attachment C: Sediment Chemistry Data
- Attachment D: Completeness Checklist

1.0 INTRODUCTION

1.1 Project Description

The Corps of Engineers, New England District (NAE) is evaluating sediments proposed for dredging and disposal from the Searsport Harbor Federal Navigation Project in Searsport, Maine. The work requested is to assist NAE in gathering physical and chemical data for analyzing the environmental impacts associated with proposed maintenance and improvement dredging of sediments and other substrate material in Searsport Harbor. The data will be used to support NAE's suitability determination for open-water placement of the dredged material under Section 404 of the Clean Water Act. All methods employed were consistent with the National Guidance provided in *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.—Testing Manual* (EPA/USACE 1998), also known as the “Green Book,” and the Regional Testing Manual *Final Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters* (EPA/USACE 2004).

1.2 Scope of Work

The project scope of work consisted of sediment cores collected from each of the 10 designated sampling locations within Searsport Harbor and sediment grab samples from two reference (dredged material disposal) locations: the historic Belfast Bay Disposal Site (BBDS) and the alternative Penobscot Disposal Site (PDS). The Rockland Disposal Site will also be considered for dredge material disposal using known data for this site, and no new samples from this site were collected as part of this Scope of Work. Sediment samples were collected for physical and chemical analyses.

Field Collections — TG&B performed all sediment coring activities under the supervision of a Battelle Chief Scientist.

Physical and Chemical Analyses — Initial grain size (GS) analysis of all 10 sediment cores plus the two reference sites was performed by Applied Marine Sciences (AMS) of League City, Texas. AMS also conducted Atterberg Limits testing on select subsamples of sediment cores and total organic carbon (TOC) analysis on sediment composites and the reference site sediments. Battelle conducted metals and organic (polychlorinated biphenyls (PCBs) as congeners, polynuclear aromatic hydrocarbons (PAHs), and chlorinated pesticides) analyses on sediment composites and the reference site sediments.

1.3 Organization of this Report

This report was prepared in accordance with the requirements outlined in the NAE Statement of Work (SOW) for Searsport Harbor, Maine. This report is organized in four sections and four appendices. Section 1.0 is an introduction and describes the project and scope of work. A summary of the materials and methods used in support of this project is presented in Section 2.0. Results of physical and chemical testing for the sediment samples are discussed in Section 3.0. References are provided in Section 4.0. Complete test results are provided as appendices to this report: Attachment A contains the Draft Field Sampling Report and field custody records for Searsport Harbor, and Attachment B contains the sediment composite preparation logs and custody forms. Attachment C contains results from initial GS testing, Atterberg Limits, TOC,

organic contaminant, and metals testing. Finally, Attachment D contains the Completeness Checklist.

2.0 MATERIALS AND METHODS

This section summarizes the methods used for sample collection, and physical and chemical testing of sediment samples for the Searsport Harbor Federal Navigation Project. Sample collection and analytical activities generally followed the project Sampling and Analysis Plan (SAP) (Battelle 2008); deviations to the SAP are documented in Section 2.3.5.

2.1 Sample Collection/Processing

On April 30 and May 1, 2008, sediment core samples were collected at each of 10 stations in Searsport Harbor, Maine (Figure 2-1). At each of the 10 locations, vibracore or push core samples were collected to the target project depth. Sampling continued at each location until the volume requirements specified in the Sampling and Analysis Plan (SAP) (Battelle 2008) were met. On May 2, 2008, bulk sediment samples were collected in triplicate from two reference locations (i.e., BBDS and PDS) within Penobscot Bay, Maine (Figure 2-1). All samples were returned to Battelle Duxbury for compositing, homogenization, and sub-sampling.

Sediment collections, rinsate blank collections, and sample processing methods are summarized below. Complete details on the survey/sampling methods can be found in the Field Sampling Report (Attachment A).

2.1.1 Sediment Core Collections

Vibracore samples were collected to the depths specified in the SOW and summarized in the Searsport Harbor SAP (Battelle 2008). Battelle and its subcontractor, TG&B, were responsible for collecting all vibracore samples.

On April 30 and May 1, 2008, core samples were collected at each of 10 stations (Figure 2-1) using a vibracorer to maximize efficiency and core recovery. Three sampling locations were established within the existing Federal Navigation Project limits (E, F, G) and seven locations were established within the proposed project limits and outside of the existing project (A, B, C, D, H, I, J). Target core depths (ranging from 3 to 10 feet) as defined in the SAP (Battelle 2008) were based on estimated refusal depths resulting from previous boring and geophysical studies.

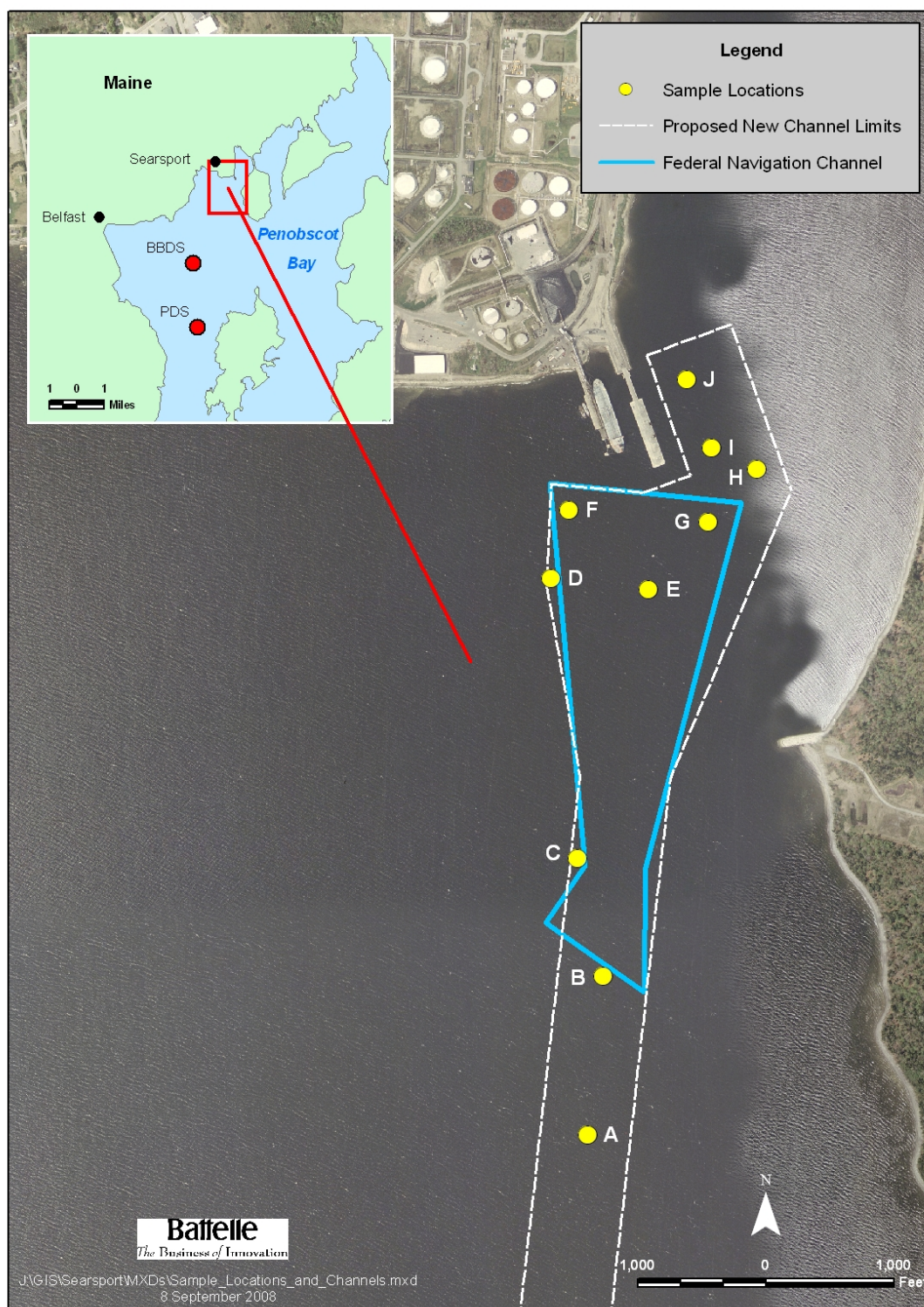


Figure 2-1. Sampling Locations within Searsport Harbor and Reference Locations.

In some circumstances, the silty maintenance material was better retained using a push core method (Stations H and I). Detailed core sampling logs are provided as an appendix to the Draft Field Sampling Report (Attachment A). All cores were captured in 3-5/8 inch (internal diameter) pre-rinsed, polycarbonate (Lexan™) liners. Each acceptable core was capped on the bottom while horizontal, positioned vertically and capped on top, labeled, and stored upright. During all field activities samples were stored on the vessel in 30-gallon barrels filled with ice. Throughout the survey, samples were transferred nightly into a refrigerator truck and stored at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until returning from the field to Battelle. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until processing (see Section 2.1.4).

Table 2-1. Cross-reference for Station ID and Individual Sample ID.

Sampling Area	Station ID	Sample Type	Sample ID
Searsport Harbor (within existing project limits)	E	Sediment Core	HAC-005
	F		HAC-006
	G		HAC-007
Searsport Harbor (within proposed project limits and outside existing project)	A		HAC-001
	B		HAC-002
	C		HAC-003
	D		HAC-004
	H		HAC-008
	I		HAC-009
Belfast Bay Disposal Site (reference)	J		HAC-010
	BBDS (1 of 3)	Sediment Grab	HAC-012
	BBDS (2 of 3)		HAC-013
Penobscot Disposal Site (reference)	BBDS (3 of 3)		HAC-014
	PDS (1 of 3)		HAC-015
	PDS (2 of 3)		HAC-016
	PDS (3 of 3)		HAC-017
Searsport Harbor	NA	Core Rinsate Blank	HAC-011
Belfast Bay	NA	Grab Rinsate Blank	HAC-018
Composite 1	A, B, C	Sediment Composite	HAC-019
Composite 2	D, F		HAC-020
Composite 3	E, G, H, I		HAC-021
Composite 4	J		HAC-022

2.1.2 Reference Sediment Grab Collections

Bulk sediment samples were collected in triplicate on May 2, 2008 from two reference locations (i.e., BBDS and PDS) within Penobscot Bay, Maine. Detailed station logs are provided as Attachment A. Bulk sediment was collected using a Kynar coated 0.1-m² Van Veen grab sampler; sediment was placed into labeled, 3.5-gallon polyethylene buckets, transferred into a refrigerator truck, and stored at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until returning from the field to Battelle. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until processing (Section 2.1.4).

2.1.3 Rinsate Blank Sampling

One rinsate blank was collected for each type of sampling apparatus: the sediment grab sampler and vibracorer. Rinsate blanks were stored cold ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) and transported to the appropriate laboratory for chemical analysis.

- **Coring**— All materials to which the sediment was exposed (e.g., core liners) were rinsed with deionized water. This rinsate was collected for both organics (PAHs, PCB/pesticides) and metals.
- **Grab sampling**—The grab sampler to which sediment was exposed was rinsed with deionized water, and rinsate was collected for both organics (PAHs, PCB/pesticides) and metals.

2.1.4 Sediment Processing and Subsampling

Sediment core samples were hand-delivered to the Battelle Duxbury, Massachusetts laboratory on May 3, 2008 and maintained in a secure, cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until processing the following week. Sediment core samples were processed on May 5 and May 6, 2008. Cores were cut laterally using electric tin snips and were generally characterized in terms of sediment type (silt, sand, and clay), color, odor, and horizons. Digital photographs were taken of each core prior to sub-sampling (Attachment A). If a horizon was observed, subsamples were taken from the maintenance layer (top) and parent layer (bottom) after homogenizing the subsections. If no horizon was present, subsamples were taken from the surface (0-1') and underlying layer (1-2') after homogenizing the subsections. Aliquots of these subsamples, in addition to the reference samples, were sent to AMS for initial GS testing on May 6, 2008. The core processing logs included in the Draft Field Sampling Report (Attachment A) provide a detailed record of core visualization and sub-sampling efforts. Chains of Custody forms for all samples are also provided in Attachment A.

On May 14, 2008, the sediment composites (Table 2-1) were prepared using the compositing scheme identified by NAE, which was determined based on a review of the initial GS results. Composites were prepared by homogenizing the subsamples from the top two feet of each assigned station and combining the mixed sediment in equal portions to a HDPE bucket (Attachment B). Four composite sediment samples were then sub-sampled for TOC, organic contaminants, and trace metals testing, and were shipped to the performing laboratory on May 14 and 15, 2008. Splits were also collected for archival.

2.2 Physical and Chemical Testing

Sediment core and reference site samples received physical testing for geotechnical parameters including grain size distributions, percent moisture, and specific gravity; selected sediment core samples also received Atterberg Limits analysis. Sediment composite samples and reference site samples received chemical testing, including TOC, PCB, chlorinated pesticide, PAH, and metals analyses.

2.2.1 Geotechnical Analysis

Sediment samples from the 10 Searsport Harbor stations (Stations A through J; Figure 2-1) were analyzed for gravel, sand, silt, and clay according to ASTM D422. Composite harbor and reference site sediment samples were analyzed for full grain size distribution (ASTM D422),

water content (ASTM D2216), and visual classification (ASTM D2487). Results are reported on a percent dry-weight basis, and include distribution curves. Analysis was performed as quick-turn-around and results were available within five days of receipt of samples at the laboratory. Composite harbor and reference site sediment samples were analyzed for TOC according to EPA SW846 Method 9060A. All samples were analyzed in duplicate for TOC. Results are reported on a percent dry-weight basis.

Atterberg Limits were performed on a subset of sediment cores identified by NAE following ASTM Method D4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils. Briefly, the sample was processed to remove material retained on the No. 40 sieve. The liquid limit was determined over a range of water contents and the data were plotted from which the liquid limit is determined. The plastic limit was determined by drying the sample to the point where a 3.2 mm thread crumbles. The plasticity index was calculated as the difference between the liquid limit and the plastic limit. Specific gravity was measured according to ASTM D854. Results for specific gravity were reported on a dry-weight basis.

2.2.2 Organic Contaminants

2.2.2.1 Sediments

The four composite harbor and six reference site (2 locations x 3 replicates) sediment samples were extracted and analyzed for PCBs, pesticides and PAHs according to general NS&T methodologies (Peven and Uhler 1993). Sediment samples were prepared for analysis according to Battelle SOP 5-192, *Soil/Sediment Extraction for Trace Level Semi-Volatile Organic Contaminant Analysis*. Briefly, approximately 30 g of well-mixed, wet sediment was added to the extraction vessel, fortified with surrogate internal standards (SIS), and extraction solvent (methylene chloride). Samples were serially extracted three times using shaker table techniques. The combined extract was dried over anhydrous sodium sulfate, reduced in volume and cleaned using activated copper, alumina column, and high performance liquid chromatography (HPLC) cleanup. All sample extracts (sediment and rinsate blanks) were solvent exchanged into hexane, fortified with internal standards (IS), and split 50:50 for concurrent PCB/pesticide and PAH analyses.

The split extract for PCB/pesticide analysis was analyzed using gas chromatography/electron capture detection (GC/ECD) according to Battelle SOP 5-128, *Identification and Quantification of Polychlorinated Biphenyls (By Congener and Aroclor) and Chlorinated Pesticides by Gas Chromatography/Electron Capture Detection*. The split extract for PAHs was analyzed in the selected ion monitoring (SIM) mode using gas chromatography/mass spectrometry (GC/MS) according to Battelle SOP 5-157, *Identification and Quantification of Semi-Volatile Organic Compounds (SVOC) by Gas Chromatography/Mass Spectrometry*. A list of target analytes and detection limits is presented in Table 2-2. Concentrations of target PCBs, pesticides and PAHs were determined by the method of internal standards, using the IS. Sediment results are reported in microgram per kilogram ($\mu\text{g/kg}$) dry weight.

Total PCB is reported as two times the sum of the target congeners (Table 2-2); one half the method detection limit (MDL) was used for non-detects.

Sediment samples were re-extracted in the laboratory for PAHs because some QC results were unacceptable. The percent recovery of selected low molecular weight (LMW) surrogate compounds was near or below the lower acceptable limit of 30% (Table 2-3). In addition, results from the SRM analysis indicated a number of compounds that were under-recovered compared to the certified value. QC results from the re-extracted samples were acceptable and the re-extract data are provided in this report.

Table 2-2. List of Parameters Analyzed^(a) and Laboratory Achieved Detection Limits.^(b)

Parameter	MDL	RL	Parameter	MDL	RL
Polycyclic Aromatic Hydrocarbons	µg/kg DW (ppb)	µg/kg DW (ppb)	Polychlorinated Biphenyls	µg/kg DW (ppb)	µg/kg DW (ppb)
Naphthalene	0.27	0.74	Cl2(8)*	0.16	0.36
Acenaphthylene	0.18	0.74	Cl3(18)*	0.06	0.36
Acenaphthene	0.24	0.74	Cl3(28)*	0.07	0.36
Fluorene	0.16	0.74	Cl4(44)*	0.06	0.36
Anthracene	0.44	0.74	Cl4(49)	0.06	0.36
Phenanthrene	0.26	0.74	Cl4(52)*	0.06	0.36
Fluoranthene	0.57	0.74	Cl4(66)*	0.73	0.36
Pyrene	0.55	0.74	Cl5(87)	0.07	0.36
Benzo(a)anthracene	0.3	0.74	Cl5(101)*	0.06	0.36
Chrysene	0.4	0.74	Cl5(105)*	0.1	0.36
Benzo(b)fluoranthene	0.27	0.74	Cl5(118)*	0.08	0.36
Benzo(k)fluoranthene	0.31	1.47	Cl6(128)*	0.08	0.36
Benzo(a)pyrene	0.25	0.74	Cl6(138)*	0.07	0.36
Indeno(1,2,3-cd)pyrene	0.18	0.74	Cl6(153)*	0.08	0.36
Dibenz(a,h)anthracene	0.15	0.74	Cl7(170)*	0.09	0.36
Benzo(g,h,i)perylene	0.23	0.74	Cl7(180)*	0.09	0.36
Chlorinated Pesticides	µg/kg DW	µg/kg DW	Cl7(183)	0.08	0.36
4,4'-DDD	0.08	0.36	Cl7(184)	0.09	0.36
4,4'-DDE	0.08	0.36	Cl7(187)*	0.08	0.36
4,4'-DDT	0.08	0.36	Cl8(195)*	0.08	0.36
Aldrin	0.06	0.36	Cl9(206)*	0.08	0.36
a-chlordane	0.25	0.36	Cl10(209)*	0.1	0.36
g-chlordane	0.08	0.36	Metals	µg/g DW	µg/g DW
Lindane	0.06	0.36	Arsenic	0.18	0.5
cis-nonachlor	0.08	0.36	Cadmium	0.0044	0.01
trans-nonachlor	0.24	0.36	Chromium	0.02	0.07
Oxychlordane	0.08	0.36	Copper	0.058	0.2
Dieldrin	0.17	0.36	Lead	0.25	0.7
Endosulfan I	0.1	0.36	Mercury	0.002	0.007
Endosulfan II	0.09	0.36	Nickel	0.023	0.07
Endrin	0.07	0.36	Zinc	0.21	0.7
Heptachlor	0.08	0.36			
Heptachlor epoxide	0.08	0.36	Geotechnical	% DW	% DW
Hexachlorobenzene	0.07	0.36	TOC	0.01	0.03
Methoxychlor	0.09	0.36	Grain Size	0.01	0.03
Toxaphene	3.67	28.75	% Moisture	1	3

MDL, method detection limit; RL, reporting limit; µg/kg, microgram per kilogram, DW = dry weight; %, percent.

^(a) Parameters analyzed were in accordance with the requirement specified in the project SAP (Battelle 2008a).

^(b) MDLs reported for pesticides/PCBs, PAHs, and metals were based the 2008 MDL studies.

* PCB congener used in calculation of total PCB.

2.2.2.2 Rinsate Blanks

Two rinsate blank samples were extracted for PCBs, chlorinated pesticides, and PAHs according to Battelle SOP 5-200, *Water Extraction for Trace Level Semi-Volatile Organic Contaminant Analysis*. Approximately 1-L of each water sample was fortified with a set of SIS, and extracted three times with methylene chloride using separatory funnel techniques. The combined extract was dried over anhydrous sodium sulfate and concentrated to approximately 1-mL. The extract was fortified with a set of IS and split 50:50 for concurrent PCB/pesticide and PAH analyses.

PCB, pesticide, and PAH analyses were performed following methods described in Section 2.2.2.1. All target compounds were quantified by the method of internal standards using IS and results are reported in nanograms per liter (ng/L).

2.2.3 Metals

2.2.3.1 Sediments

The four composite sediment and six reference site samples (2 locations x 3 replicates) were analyzed for eight metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn). Detection limits for each metal are provided in Table 2-2. Samples were freeze-dried and homogenized using a ball-mill prior to digestion according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*. Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. An approximately 200-mg (dry weight) aliquot of each sample was combined with nitric and hydrochloric acids (aqua regia) in a Teflon bomb and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After heating and cooling, deionized water was added to the sediment digestate to achieve analysis volume. Digestates were submitted for analysis by three methods.

Digested samples were analyzed for Hg using cold-vapor atomic absorption spectroscopy (CVAA) according to Battelle SOP MSL-I-034, *Total Mercury in Tissues and Sediments by Cold Vapor Atomic Absorption*. This procedure is based on modification of EPA Method 7473.

Digested samples were analyzed for As and Cd using inductively coupled plasma-mass spectrometry (ICP-MS) according to Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 6020 with adaptations for the analysis of trace level metals in digested sediment and tissue samples.

Digested samples were analyzed for all other metals using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

All metals results are reported in microgram per gram (µg/g) dry weight.

2.2.3.2 Rinsate Blanks

The equipment rinsate blank was analyzed for As, Cd, Cr, Cu, Pb, Hg, Ni, and Zn. The samples were submitted for analyses by two methods. Samples were analyzed for total Hg by cold vapor atomic fluorescence (CVAF) in accordance with Battelle SOP MSL-I-013; *Total Mercury in Aqueous Samples by CVAF* based on EPA Method 1631 Revision E. Samples were analyzed for

all other metals by ICP-MS in accordance with Battelle SOP MSL-I-022. All data are reported in units of microgram per liter ($\mu\text{g/L}$) for each sample.

2.3 Quality Assurance/Quality Control Procedures

Field and analytical activities used in the collection and analysis of sediments for physical and chemical parameters followed approved SOPs, referenced agency methods, or the SAP (Battelle 2008). Deviations are documented in Section 2.3.5.

Each batch of sediment samples for physical and chemical testing was prepared with a routine set of quality control (QC) samples to monitor data quality in terms of accuracy and precision. QC samples included a procedural blank, laboratory control sample (LCS), matrix spike (MS), matrix spike duplicate (MSD), sample duplicate (DUP), and standard reference material (SRM), where available.

2.3.1 Measurement Quality Objectives

Project specific Measurement Quality Objectives (MQOs), against which all data from this project were evaluated, are presented in Table 2-3. Physical and chemical data were evaluated against the MQOs, and data reporting qualifiers (Table 2-4) were applied when the analytical MQOs were exceeded.

Table 2-3. Measurement Quality Objectives.^a

QC Parameter	Measure or Acceptance Criteria	Corrective Action
	Blank: $<5 \times \text{MDL}$	Reextract, reanalyze, and/or blank subtract ^e ; document corrective actions
Accuracy LCS	Organics: 50 to 120% R Metals: 75 to 125% R	Reextract, reanalyze, and/or document and justify; all corrective actions documented
MS/MSD	Organics: 50 to 120% R ^b Metals: 75 to 125% R ^b	As above
SRM	Organics: $\leq 30\%$ PD ^c from target concentration plus the 95% confidence interval. Metals: Within 25% PD ^d from certified value.	As above
SIS	Organics: 30 - 150% R	As above
Precision Replicates	Organics and Metals: MS/MSD: $\leq 30\%$ RPD ^b between % recoveries Sample Duplicate: $\leq 30\%$ RPD ^d between values Grain Size: RPD $\leq 25\%$ TOC: RPD $\leq 30\%$	As above

MDL: method detection limit; PD: percent difference; R: recovery; RPD: relative percent difference; LCS: laboratory control sample; MS/MSD: matrix spike/matrix spike duplicate; SRM: standard reference material; SIS: surrogate internal standard;

^a Quality control samples are based on an analytical batch size of 20.

^b Analyte concentration in MS must be $>5 \times$ background concentration to be used for data quality assessment.

^c PD determined using surrogate corrected data. PD only determined for certified analytes.

^d For analytes detected at concentrations $>10 \times \text{MDL}$.

^e Blank subtracting is applicable to metals only, and would require the NAE project manager's consultation and approval.

Table 2-4. Data Reporting Qualifiers.

Data Qualifier	Definition
J	Analyte detected at level less than the laboratory achieved detection limit (i.e., ssRL for organics and RL for metals).
E	Estimate, result > highest concentration level in the calibration.
B	Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank (the qualifier is only applied to the affected field samples).
U	Not detected above laboratory achieved method detection limit; MDL reported
N	QC value outside the accuracy or precision criteria goal
n	QC value outside the accuracy or precision data quality objective, but meets contingency criteria.

2.3.2 Analytical Reporting

Sample results were evaluated against achieved laboratory detection limits, including MDLs and reporting limits (RLs). Chemical contaminants either not detected or detected at a concentration below the MDL were reported as the RL (sample-specific RLs used for organic contaminants) and U flagged. Chemical contaminants detected at a concentration above the MDL, but below the RL, were reported and J flagged.

2.3.3 Chain of Custody

Sample custody forms accompanied all samples from the field to the laboratory and between laboratories. Copies of sample custody forms and laboratory receipts are provided in Appendices A and B.

2.3.4 Data Audits/QA Review

All data received internal verification and validation following established procedures at the laboratory where the data were generated. QA/QC narratives and QA/QC checklists as required by the RIM (EPA/USACE 2004) are provided with the sample data in Attachment C. The QA/QC narratives include a discussion of the QC results; a description of MQO exceedances; and the impact, if any, the exceedances may have on the overall field sample data.

2.3.5 Protocol Deviations

2.3.5.1 Field Survey

During core sampling at Stations H and I, initial attempts resulted in poor recovery rates (<60%). Based on initial assessment of sediments and site conditions, the field crew switched from a vibracore method to a push core method in an effort to increase surface layer retention. Sampling efforts were successful and recovery rates were increased to acceptable levels.

2.3.5.2 Laboratory Testing

There were no protocol deviations; all analytical activities followed the project SAP (Battelle 2008a).

3.0 RESULTS

This section summarizes results obtained from the physical and chemical analysis of the sediment samples collected from Searsport Harbor, Maine. Complete test results are reported in Attachment C.

In general, laboratory QC data were within the MQO acceptance criteria and the quality of the data is acceptable. Exceedances to the MQOs are discussed in the QA/QC narratives provided with the sample data (Attachment C), and are summarized below in Section 3.4.

3.1 Geotechnical Analysis

Individual sediment core subsamples and reference site sediment samples were analyzed for grain size distribution, percent moisture, and specific gravity. Selected samples were also analyzed for Atterberg Limits. Sample results are summarized in Table 3-1, and complete test results are provided in Attachment C. Initial grain size data was subsampled by foot from the surface (0-1') and underlying layer (1-2') at each station, except at station F. At station F, a horizon was present at 3.6 feet. After discussion with NAE, station F was subsampled for initial grain size data at 0 – 1.9 feet, 1.9 – 3.6 feet, and 3.6 to 7.3 feet. The initial grain size data were used by NAE to develop a compositing scheme, which is clarified in the first column of Table 3-1.

Grain size data for three of the four harbor composite samples showed that sediments were fine-grained, comprised predominantly of silt and clay (>90%) with smaller amounts of fine and medium sands. Sediment at Station J was coarser, with roughly equal distributions of medium and fine sands, silt, and clay fractions. This station was located farthest outside the existing navigation project limits and was the most inshore of all stations. The BBDS and PDS reference station samples were comprised predominately of silt (42-45%) and clay (55-56%). As expected, sediment grain size generally corresponded well with TOC for the four harbor composite and BBDS and PDS reference sediment samples. For example, most of the composites with predominantly fine-grained sediments contained higher percentages of TOC, while Composite 4 which contained mostly gravel and sand had a much lower percentage of TOC.

Table 3-1. Summary of Geotechnical Results for Sediment Cores and Reference Samples.

Comp #	Sample ID	Description	Penetration Depth (ft)	% Gravel	% Coarse Sand	% Med Sand	% Fine Sand	% Silt	% Clay	% Water Content	Specific Gravity	Liquid Limit	Plastic Limit	Plasticity Index
1	HAC-001	Station A	0-1	0.00	0.00	0.15	0.53	56.08	43.24	145	2.64	116	49	67
			1-2	0.00	0.05	0.44	0.59	39.34	59.58	118	2.68	NR	NR	NR
	HAC-002	Station B	0-1	0.90	0.17	0.51	1.00	42.48	54.94	126	2.64	NR	NR	NR
			1-2	0.00	0.17	0.38	1.09	40.81	57.55	123	2.66	105	43	62
	HAC-003	Station C	0-1	0.00	0.16	0.37	0.87	44.15	54.45	127	2.65	103	43	60
			1-2	0.00	0.49	0.95	1.66	44.18	52.72	123	2.67	NR	NR	NR
2	HAC-004	Station D	0-1	0.00	0.00	0.47	1.17	49.87	48.49	146	2.66	111	46	65
			1-2	2.09	0.52	0.61	1.47	45.26	50.05	112	2.67	104	44	60
	HAC-006	Station F	0-1.9	0.00	0.00	0.10	0.73	56.16	43.01	185	2.61	115	45	70
			1.9-3.6	0.00	0.28	0.24	0.94	50.39	48.15	115	2.67	NR	NR	NR
			3.6-7.3	0.00	0.00	0.11	0.48	40.86	58.55	29	2.78	NR	NR	NR
3	HAC-005	Station E	0-1	0.00	0.65	2.28	3.12	60.30	33.65	69	2.68	NR	NR	NR
			1-2	1.51	1.08	3.77	4.59	60.86	28.19	94	2.57	73	40	33
	HAC-007	Station G	0-1	0.00	0.00	0.06	5.09	69.62	25.23	26	2.72	NR	NR	NR
			1-2	0.00	0.16	0.11	4.37	67.04	28.32	23	2.72	NR	NR	NR
	HAC-008	Station H	0-1	0.00	0.19	0.61	3.77	49.48	45.95	114	2.62	92	39	53
			1-2	0.00	0.14	0.64	2.41	48.86	47.95	113	2.67	97	41	56
	HAC-009	Station I	0-1	0.00	0.24	0.54	1.66	51.71	45.85	117	2.67	NR	NR	NR
			1-2	0.00	0.28	1.61	6.14	54.93	37.04	116	2.65	94	39	55
4	HAC-010	Station J	0-1	3.08	6.78	22.49	28.37	30.98	8.30	57	2.63	NR	NR	NR
			1-2	27.88	4.89	19.91	20.96	15.42	10.94	30	2.69	NR	NR	NR
NA	HAC-012	BBDS	0.5	0.00	0.07	0.12	0.06	47.52	52.23	164	2.66	NR	NR	NR
	HAC-013		0.5	5.08	0.08	0.12	0.12	37.85	56.75	155	2.66	NR	NR	NR
	HAC-014		0.5	0.00	0.00	0.04	0.10	41.30	58.56	159	2.64	NR	NR	NR
NA	HAC-015	PDS	0.5	0.00	0.00	0.05	0.41	40.64	58.90	174	2.65	NR	NR	NR
	HAC-016		0.5	0.00	0.00	0.05	0.42	50.72	48.81	165	2.68	NR	NR	NR
	HAC-017		0.5	0.00	0.00	0.08	0.47	43.16	56.29	166	2.68	NR	NR	NR

NR, analysis Not Required according to the project scope of work.

3.2 Sediment Chemistry

Sediment composite and reference site samples were analyzed for TOC, PCB congeners, chlorinated pesticides, PAHs, and trace metals. Complete test results are provided in Attachment C of this report.

3.2.1 Total Organic Carbon

The harbor composite and reference samples contained moderate levels of TOC, ranging from 0.97% to 2.74% (Attachment C). TOC values were generally lower in sediment located in the northwest region of the study area. Station J had the lowest TOC values and BBDS had the highest TOC values.

3.2.2 PCBs and Pesticides

PCBs and pesticides were generally undetected or detected at low levels among the four composite samples from Searsport Harbor and reference samples (Table 3-2, Attachment C). Detected concentrations of PCBs and pesticides were well below sediment quality guidelines (Long *et al.* 1995).

3.2.3 Polycyclic Aromatic Hydrocarbons

PAHs were detected in all harbor composite and reference site samples (Table 3-2). PAH concentrations were slightly lower in sediment composite EGH1 compared to the other harbor composite samples. All of the sediment samples demonstrated similar compound distribution patterns (dominated by pyrene and fluoranthene), suggesting similar PAH sources. PAH concentrations in all harbor composite and reference site samples were well below the sediment quality guidelines (Long *et al.* 1995, Table 5).

3.2.4 Metals

Metals were detected in all harbor composite and reference site samples (Table 3-2). Concentrations of most metals were generally below the sediment quality guidelines, especially at harbor locations (Table 3-2). For example, metals concentrations were below the sediment quality guidelines in all harbor composites except for chromium in harbor composite ABC and nickel in harbor composites ABC, DF and EGH1. Chromium and nickel concentrations were also above the sediment quality guidelines in the reference site samples, as were mercury concentrations (Table 3-2). The lowest metals concentrations (except cadmium) were measured in the coarse-grained, low organic carbon content sediment sampled at harbor Station J.

Table 3-2. Summary of Sediment Organic Contaminant (µg/Kg dry weight) and Metals (µg/g dry weight) Data.

Parameter	Sediment Quality Guidelines (Long <i>et al.</i> 1995)		Sample and Station IDs											
			BBDS		PDS		A, B, C		D, F		E, G, H, I		J	
			HAC-012, 013, 014		HAC-015, 016, 017		HAC-019		HAC-020		HAC-021		HAC-022	
	ER-L	ER-M	$\bar{X} \pm \sigma$	Qual	$\bar{X} \pm \sigma$	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual
Total PCB (a)	22.7	180	14.11±0.23		13.49±0.5		12.6		12.8		10.12		8.12	
Total DDT (b)	3	350	1.43±0.1		0.88±0.07		0.77		0.73		0.68		0.67	
PAH Compounds														
Naphthalene	160	2100	11.39±0.89		6.49±0.18		10.08		17.66		5.06		23.57	
Acenaphthylene	44	640	23.98±0.66		14.31±0.34		11.72		16.12		4.12		8.71	
Acenaphthene	16	500	4.3±0.35		2.41±0.07		2.5		6.68		1.19		7	
Fluorene	19	540	8.04±0.46		4.52±0.02		5.45		11.21		2.59		12.27	
Anthracene	85.3	1100	23.05±0.16		12.72±0.19		13.14		29.83		5.23		20.6	
Phenanthrene	240	1500	79.75±0.9		46.75±0.72		45.42		69.24		16.93		48.41	
Fluoranthene	600	5100	174.54±3.04		105.39±2.37		87.46		114.65		26.62		71.62	
Pyrene	665	2600	161.69±3.32		94.95±1.93		89.64		143.83		32.03		113.71	
Benzo(a)anthracene	261	1600	69.98±0.93		40.23±0.78		39.49		61.2		14.07		35.87	
Chrysene	384	2800	85.49±2.8		50.77±1		47.19		83.63		16.24		50.2	
Benzo(b)fluoranthene	N/A	N/A	91.71±2.56		54.17±1.24		46.12		69.08		15.75		41.84	
Benzo(k)fluoranthene	N/A	N/A	90.55±4.97		55.85±0.55		45.9		71.62		14.58		39.1	
Benzo(a)pyrene	430	1600	93.94±2.69		55.44±0.86		47.59		69.75		15.08		37.17	
Indeno(1,2,3-cd) pyrene	N/A	N/A	84±2.81		52.15±0.81		40.02		49.02		11.65		24.57	
Dibenz(a,h)anthracene	63.4	260	18.15±0.41		10.97±0.24		9.73		13.18		3.34		7.52	
Benzo(g,h,i)perylene	N/A	N/A	77.65±2.57		47.71±0.67		38.32		47.13		11.65		24.45	
Trace Metals														
Arsenic	33	85	14±0.4		12.5±0		15.8		18.0		14.9		17.0	
Cadmium	5	9	0.089±0.004		0.075±0.003		0.091		0.172		0.118		0.159	
Chromium	80	145	87.2±0.2		83.9±1.7		81.8		75.7		63.3		47.4	
Copper	70	390	19.3±0.4		17.7±0.2		17.0		16.2		15.8		8.76	
Nickel	30	50	37.4±0.5		36.7±0.3		36.9		34.0		30.5		19.8	
Lead	35	110	26.6±0.2		22.8±0.5		18.3		15.7		11.4		10.1	
Zinc	120	270	113±2		107±1		97.7		89.0		65.0		48.4	
Mercury	0.15	1.3	0.276±0.014		0.145±0.008		0.129		0.110		0.044		0.042	

$\bar{X}$, Mean; σ , standard deviation; ER-L, Effects Range-Low; ER-M, Effects Range- Median; N/A, not applicable.

(a) Total PCB= Sum of 18 congeners multiplied by 2. ½ MDL value was used for of non-detects. (b) Total DDT= Sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT concentrations. ½ MDL value was used for of non-detects.

3.3 Quality Control

The review of the laboratory QC data is documented in QA/QC narratives and RIM QC summary sheets, which are provided with the sample data (Attachment C). The RIM Completeness Checklist is included in Attachment D. In general, the quality of the data is acceptable and the analytical methods are in control. For example, target compounds were undetected in the procedural blanks, indicating that the methods were free of contamination. Recovery and precision results for the MS, MSD, SRM, and sample duplicate QC samples were acceptable for most target compounds, indicating that the methods are in control. Naphthalene was recovered slightly below the lower MQO limit (50%) in the LCS, MS, and MSD QC samples, suggesting that these data may be biased slightly low in the project samples.

During the extraction process for organic analysis, the laboratory broke the bottle containing the rinsate blank for the sediment grab. The sample could not be recovered. Due to the hydrophobic nature of the organic compounds of concern and limited exposure of sediment to the sampling device, no corrective action was deemed necessary by NAE.

Most target compounds were undetected in the equipment rinsate blanks, indicating that the field methods were free of contamination. Selected PAHs and metals were detected in the rinsate blanks. However, concentrations were negligible compared to sample values, indicating that the low-level contamination had minimal impact on data quality.

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ATTACHMENT A

DRAFT FIELD SAMPLING REPORT

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_____ Contract No. DACW33-03-D-0004

_____ Delivery Order No. 41

_____ May 12, 2008

Draft Field Sampling Report

FIELD SAMPLING AND SEDIMENT TESTING

Searsport Harbor Federal Navigation Project, Searsport, ME

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Draft Field Report
FIELD SAMPLING AND SEDIMENT TESTING,
Searsport Harbor, ME

Submitted to:

Department of the Army
U.S. Army Corps of Engineers
North Atlantic Division
New England District

Contract Number: DACW33-03-D-0004
Delivery Order Number: DO#41

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May 12, 2008

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1.0 INTRODUCTION

This report covers the field sampling activities and initial sample processing conducted at the request of the US Army Corps of Engineers, New England District (NAE) to support a proposed navigational improvement and maintenance dredging project for Searsport Harbor Federal Navigation Project (FNP), Searsport, ME.

The field survey involved collecting sediment cores at 10 stations in and around the shipping channel in Searsport Harbor (Figure 1). Three sampling locations were established within the existing navigation channel (E, F, G) and 7 locations were established within the vicinity of the channel (A, B, C, H, I, J). Target core depths (ranging from 3 to 10 feet) as defined in the Sampling and Analysis Plan (Battelle 2008) were based on estimated refusal depths resulting from initial boring studies (Table 1). In addition, triplicate sediment grabs were collected at two reference locations within Penobscot Bay, ME; Belfast Bay Disposal Site (BBDS) and Penobscot Disposal Site (PDS).

Each of the 10 cores were classified and subsampled for grain size analysis; the data collected from these cores will be used by NAE to develop a compositing plan for additional physical and chemical analyses. Samples from reference stations will also be analyzed to determine suitability for disposal of dredge material. A tiered approach will be followed to make the determination, consistent with National Guidance provided in *Evaluation of Dredged Material Proposed for Ocean Disposal—Testing Manual* (EPA/USACE 1998), also known as the “Green Book,” and the *Regional Testing Manual Final Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters* (EPA/USACE 2004).

Table 1. Sampling Sites, Coordinates, and Depths for the Searsport Harbor FNP

Station ID	Easting (NAD83/ft)	Northing (NAD83/ft)	Latitude (NAD83/DecDeg)	Longitude (NAD83/DecDeg)	Approximate Mudline Elevation to MLLW (ft)	Estimated Penetration Depth (ft)
A	880,114	280,686	44.43601232	-68.89870990	-41	3
B	880,233	281,914	44.43938253	-68.89827718	-39	6
C	880,050	282,853	44.44195592	-68.89899539	-37	7
D	879,858	285,042	44.44795815	-68.89977152	-28	7
E	880,618	284,950	44.44771593	-68.89685944	-39	5
F	880,000	285,574	44.44941942	-68.89923768	-34	10
G	881,083	285,475	44.44916227	-68.89508847	-38	6
H	881,470	285,887	44.45029757	-68.89361404	-27	3
I	881,116	286,057	44.45075923	-68.89497286	-27	3
J	880,931	286,593	44.45222712	-68.89569126	-24	3
PDS ^a	872,965	257,132	44.37130060	-68.92561212	NA ^c	NA ^c
BBDS ^b	872,284	269,737	44.40586875	-68.92846873	NA ^c	NA ^c

^aPenobscot Disposal Site; ^bBelfast Bay Disposal Site; ^cNot Applicable

1.1 Site Description

Searsport Harbor is located in the town of Searsport, in Waldo County, about 27 miles south of Bangor and 91 miles northeast of Portland, Maine. The small commercial fishing harbor is located near the center of town to the west, while the deep-draft commercial cargo port is located at Mack Point to the east. The channel entrance, located west of Sears Island, is approximately 500 feet wide and widens on the approach to the dockage area. The authorized depth of the existing channel is -35 feet MLLW. Proposed navigation improvements include deepening to approximately -44 feet MLLW, widening then entrance to approximately 700 feet, lengthening the channel to approximately 4,400 feet, and expansion northeast of the dockage area.

1.2 Project Objectives

The purpose of this project is to collect sediment samples from representative locations in and around the authorized navigation channel. These sediments will be analyzed for a range of parameters to assess suitability of aquatic disposal of dredge material. Cores were collected using either a vibracore or push core method to the specified penetration depth or refusal. All cores were returned to Battelle's Duxbury facility for characterization and sub-sampling for grain size analyses. Initial grain size testing will allow NAE to determine the compositing scheme for the subsequent physical and chemical analyses.

2.0 FIELD SAMPLING

This Survey Report details the field sampling and sample preparation activities associated with the Searsport Harbor FNP in Searsport, ME. Table 2 shows the survey personnel, duties, and research vessel used to conduct sampling activities. All field personnel received a copy of the Accident Prevention Plan (Battelle, 2008) and Sampling and Analysis Plan (Battelle, 2008). In addition, daily safety briefings were conducted by the chief scientist (Appendix F).

Table 2. Survey Personnel and Research Vessels for the Searsport Harbor FNP

Date	Chief Scientist	Captain	Senior Sampling Staff	Survey Vessel
4/30/2008	Michael McKee	Mark Avakian	John Scanlon	R/V Carolina Skiff
5/1/2008	Michael McKee	Mark Avakian/ Lenny Perry	John Scanlon	R/V Carolina Skiff
5/2/2008	Michael McKee	Bob Bernstein	Lenny Perry/John Scanlon	R/V Moonfish

Sample collection activities are summarized below; details on the survey/sampling methods can be found in the final Searsport Harbor Sampling and Analysis Plan (Battelle 2008). Sampled locations are shown in Figure 1. A chronological summary of survey activities for sampling is provided in Section 3. Preliminary survey results are provided in Section 4. A description of survey problems and corrective actions can be found in Section 5. Daily Field Logs are presented in Appendix A.

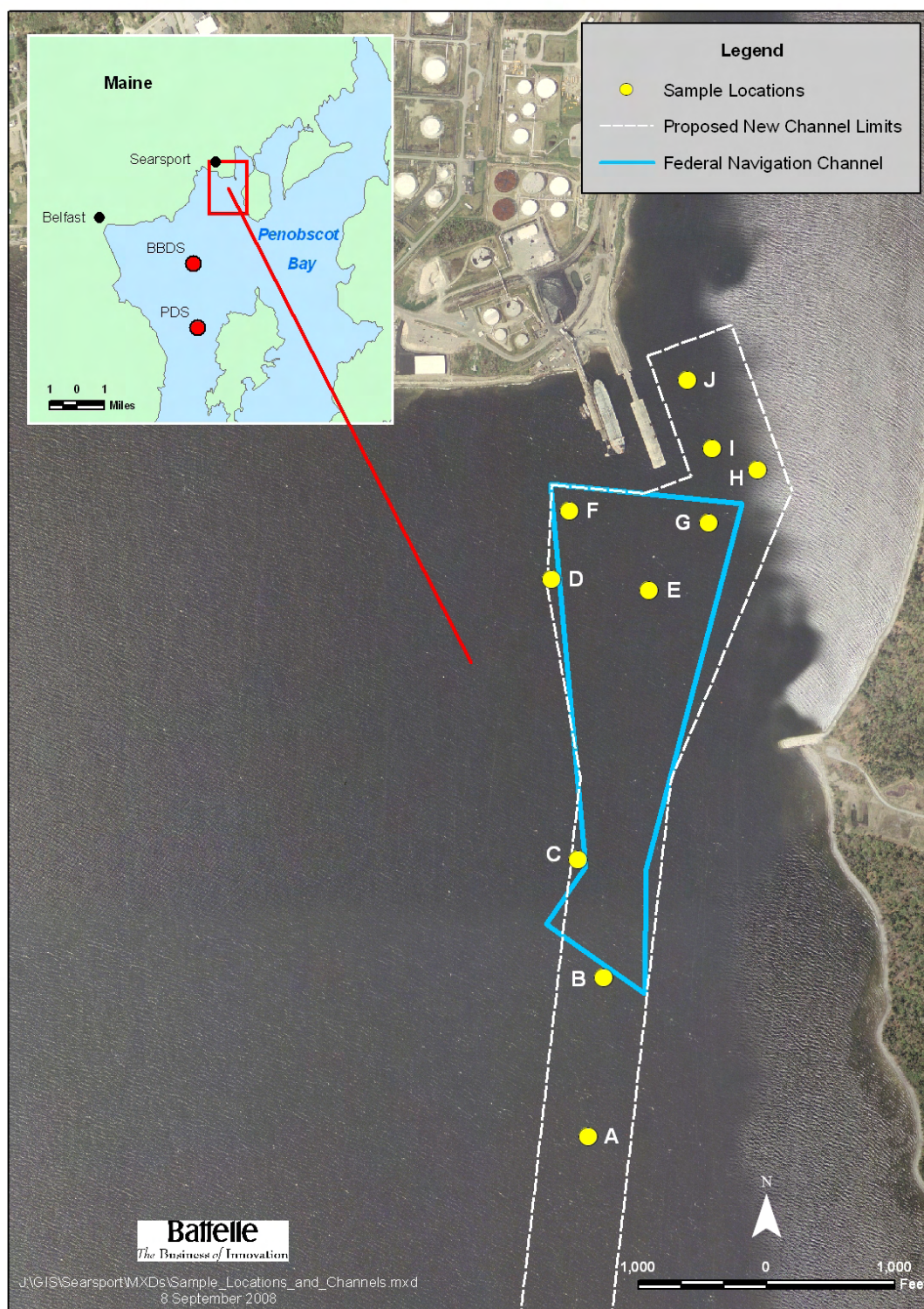


Figure 1. Sampling Locations within Searsport Harbor and Reference Locations.

2.1 Harbor Sampling

On April 30 and May 1, 2008, core samples were collected at each of 10 stations (Figure 1) using a vibracorer to maximize efficiency and core recovery. In some circumstances, the silty maintenance material was better retained using a push core method (Stations H and I). A summary of the coring survey data is presented in Table 3. Detailed core sampling logs are provided as Appendix B. All cores were captured in pre-rinsed polycarbonate (Lexan™) liners. Each acceptable core was capped on the bottom while horizontal, positioned vertically and capped on top, labeled, and stored upright. During all field activities samples were stored on the vessel in 30-gallon barrels filled with ice. Throughout the survey, samples were transferred nightly into a refrigerator truck and stored at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until returning from the field to Battelle, Duxbury. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until processing.

Table 3. Summary of Sample Collections for the Searsport Harbor FNP

Station ID	Sample ID	Collection Date	Collection Time (EDT)	Latitude (NAD 83)	Longitude (NAD 83)	Water Depth (Ft)	Tide (Ft)	Penetration (Ft)	Recovery (Ft)
A	HAC-001	05/01/08	11:12	44.436023	-68.898720	45.6	5.2	3.0	2.0
B	HAC-002	04/30/08	15:25	44.439420	-68.898230	44.0	4.0	6.9	6.9
C	HAC-003	04/30/08	12:26	44.441952	-68.898995	38.4	0.8	7.0	6.9
D	HAC-004	04/30/08	10:55	44.447960	-68.899787	32.2	2.8	7.0	6.9
E	HAC-005	05/01/08	13:45	44.447713	-68.896863	40.8	1.1	5.0	3.5
F	HAC-006	04/30/08	11:30	44.449422	-68.899235	37.2	2.3	7.8	7.3
G	HAC-007	04/30/08	09:50	44.449168	-68.895083	45.8	6.6	6.0	5.2
H	HAC-008	05/01/08	15:18	44.450302	-68.893620	29.6	2.9	3.5	3.1
I	HAC-009	05/01/08	16:05	44.450762	-68.894987	31.0	3.1	4.0	3.1
J	HAC-010	05/01/08	08:58	44.452213	-68.895705	30.0	7.2	3.0	2.0
BBDS ^a	HAC-012	05/02/08	08:28	44.405850	-68.929267	78.3	N/A ^c	0.5	0.5
BBDS ^a	HAC-013	05/02/08	08:49	44.405850	-68.928467	78.3	N/A ^c	0.5	0.5
BBDS ^a	HAC-014	05/02/08	09:05	44.405850	-68.928533	78.3	N/A ^c	0.5	0.5
PDS ^b	HAC-015	05/02/08	09:50	44.370967	-68.924817	146.0	N/A ^c	0.5	0.5
PDS ^b	HAC-016	05/02/08	10:05	44.371083	-68.924983	146.0	N/A ^c	0.5	0.5
PDS ^b	HAC-017	05/02/08	10:20	44.371267	-68.925617	146.0	N/A ^c	0.5	0.5

^aPenobscot Disposal Site; ^bBelfast Bay Disposal Site; ^cNot Applicable

2.2 Reference Site Sampling

Bulk sediment samples were collected in triplicate on May 2, 2008 from two reference locations within Penobscot Bay, ME; Belfast Bay Disposal Site (BBDS) and Penobscot Disposal Site (PDS). A summary of the reference sampling data is presented in Table 3. Detailed station logs are provided as Appendix C. Bulk sediment was collected using a Kynar coated 0.1-m² Van Veen grab sampler; sediment was placed into labeled, 3.5-gallon polyethylene buckets, transferred into a refrigerator truck and stored at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until returning from the field to Battelle, Duxbury. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until processing.

2.3 Field Quality Control

All sampling equipment was decontaminated prior to sample collection activities following procedures described in the project SAP (Battelle, 2008). Rinsate blanks were collected for each type of sampling equipment used: core liners and grab sampler (Table 4). A sufficient volume of rinsate blank water was collected to conduct organic contaminant and metals analyses. All rinsate blanks were transported to Battelle Duxbury and stored at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until transport to the participating laboratories for chemical analysis. Rinsate blanks for metals analysis were preserved to $\text{pH} < 2$ with nitric acid immediately after collection.

Table 4. Summary of Rinsate Blanks Collected for the Searsport Harbor FNP

Analytical Parameter	Sample ID	Collection Date	Collection Time (EDT)	Sample Container	Sample Volume	Storage	Holding Time	Custodian
Organics	HAC-011	05/01/08	18:30	1-L Amber PC Glass Bottle	full	Cold $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$	7 days to extract	Battelle Duxbury (Jeannine Seyfert)
Metals	HAC-011	05/01/08	18:30	1-500mL Teflon Bottle	full	Cold $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$	Acidified ($\text{pH} < 2$) Metals: 6 months Hg only: 28 days	Battelle Sequim (Carolyn Suslick)
Organics	HAC-018	05/02/08	11:00	1-L Amber PC Glass Bottle	full	Cold $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$	7 days to extract	Battelle Duxbury (Jeannine Seyfert)
Metals	HAC-018	05/02/08	11:00	1-500mL Teflon Bottle	full	Cold $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$	Acidified ($\text{pH} < 2$) Metals: 6 months Hg only: 28 days	Battelle Sequim (Carolyn Suslick)

2.4 Sample Processing

Sediment core samples and rinsate blank samples were hand-delivered to the Battelle Duxbury laboratory on May 3, 2008 and maintained in a secure, cold room ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) until transfer, shipment, or processing the following week.

On May 6, 2008, custody of rinsate blank samples was transferred to the Battelle Duxbury laboratory and rinsate blank samples for metals analysis were shipped by overnight carrier to the Battelle Sequim laboratory.

Sediment core samples were processed at Battelle Duxbury facilities on May 5 and May 6, 2008. Details on the sediment processing methods can be found in the Searsport Harbor Sampling and Analysis Plan (Battelle, 2008). In general, the cores underwent visual classification for sediment type, color, odor, and the presence or absence of horizons. Digital photographs were taken of each core prior to subsampling (Appendix E). If a horizon was observed, subsamples were taken from the maintenance layer (top) and parent layer (bottom) after homogenizing the subsections. If no horizon was present, subsamples were taken from the surface (0-1') and underlying layer (1-2') after homogenizing the subsections. Aliquots of these subsamples, in addition to the reference samples, were sent to Applied Marine Sciences (AMS) for initial grain size testing. The core processing logs (Appendix D) provide a detailed record of core visualization and subsampling efforts. Chains of Custody forms for all samples are provided in Appendix G.

3.0 SURVEY CHRONOLOGY

Note: All times are recorded as Eastern Daylight Time.

Wednesday, April 30, 2008

- 0700 Battelle staff and TG&B staff meet at launch area, begin mobilization of the *Carolina Skiff*, conduct GPS/Fathometer check, and conduct health and safety meeting.
- 0745 Locate tidal benchmark at Steamboat public launch and measure elevation to waterline.
- 0820 Depart for Mack Point to install tide board.
- 0852 Install tide board at the end of the SW Pier at Mack Point.
- 0900 Depart for Station G.
- 0950 Complete sediment core collection at Station G. Depart for Station D.
- 1055 Complete sediment core collection at Station D. Depart for Station F.
- 1130 Complete sediment core collection at Station F. Depart for Station C.
- 1226 Complete sediment core collection at Station C. Depart for public launch.
- 1420 Survey in tide board at Mack Point (relative to MLLW) through radio communication with TG&B staff at Steamboat public launch (location of benchmark).
- 1455 Depart public launch for Station B.
- 1525 Complete sediment core collection at Station B. Depart for Station E.
- 1708 Complete sediment core collection at Station E. Depart for public launch.
- 1745 Arrive at boat ramp, conduct GPS/Fathometer check, offload samples, and secure boat. Complete Day 1.

Thursday, May 1, 2008

- 0715 Battelle staff and TG&B staff meet at launch area, conduct GPS/Fathometer check, reconfigure vibracore head for 3 5/8" lexan tubing, and conduct health and safety meeting.
- 0820 Depart public launch for Station J.
- 0858 Complete sediment core collection at Station J. Depart for Station I.
- 1015 Complete sediment core collection at Station I. Depart for Station A.
- 1112 Complete sediment core collection at Station at Station A. Depart for public launch to transfer TG&B staff.
- 1154 Return to public launch.
- 1248 Depart public launch for Station E.
- 1345 Complete second sediment core collection effort at Station E. Depart for Station H.
- 1518 Complete second sediment core collection at Station H. Depart for Station I.
- 1605 Complete sediment core collection at Station I. Depart for Station J.
- 1720 Complete second sediment core collection at Station J. Depart for public launch.
- 1800 Arrive at public launch, conduct GPS/Fathometer check, offload samples, haul and secure boat.
- 1830 Collect vibracore rinsate samples. Complete Day 2.

Friday, May 2, 2008

- 0730 Battelle staff and TG&B staff meet boat captain at Belfast public launch, begin mobilization of the *R/V Moonfish*, conduct GPS/Fathometer check, and conduct health and safety meeting.
- 0750 Depart for Belfast Bay Disposal Site.
- 0820 Arrive on station at Belfast Bay Disposal Site.

- 0915 Complete sediment grab sampling. Depart for Penobscot Disposal Site.
- 0930 Arrive on station at Penobscot Disposal Site.
- 1020 Complete sediment grab sampling. Collect sediment grab rinsate blanks.
- 1108 Depart for Belfast public launch.
- 1145 Arrive at boat dock, conduct GPS/Fathometer check, offload samples, and secure boat. Complete Day 3.

4.0 SURVEY RESULTS

A minimum of one core sample was collected at each of the 10 planned locations in Searsport Harbor (Appendix B). At Stations H and I, additional cores were collected using a push core technique to increase retention of fine silts on the surface. Although multiple cores were collected at select stations, only the most representative core was used for visual characterization and initial grain size testing. In addition, triplicate sediment grabs were collected as reference samples at both the Belfast Bay Disposal Site and Penobscot Disposal Site (Appendix C). Sampling was completed in 3 days. A summary of the coring and sediment grab survey data, which includes date, time and location, is presented in Table 3.

All cores were processed on May 5 and May 6, 2008, at Battelle's Duxbury facility. A representative from NAE (Cathy Rogers) observed the core processing and provided guidance regarding sub-sampling. The core samples analyzed and subsampling intervals are indicated in the core processing logs (Appendix D). Cores were cut laterally, characterized and sampled for grain size. The remaining material was stored in sealed HDPE buckets in a cold room until grain size results are returned, at which time the composite samples will be created for further analyses. Samples collected for grain size analysis were shipped to Applied Marine Sciences (AMS) on Tuesday, May 6, 2008.

5.0 PROBLEMS EXPERIENCED, ACTIONS TAKEN, AND RECOMMENDATIONS

During core sampling at Stations H and I, initial attempts resulted in poor recovery rates (<60%). Based on initial assessment of sediments and site conditions, the field crew switched from a vibracore method to a push core method in an effort to increase surface layer retention. Sampling efforts were successful and recovery rates were increased to acceptable levels.

During the extraction process for organic analysis, the laboratory broke a bottle holding the rinsate blank for the sediment grab. The sample could not be recovered. Due to the hydrophobic nature of the organic compounds of concern and limited exposure of sediment to the sampling device, no corrective action was deemed necessary by NAE.

6.0 REFERENCES

Battelle. 2008. *Final Sampling and Analysis Plan, Field Sampling and Sediment Testing, Searsport Harbor, Maine*. Prepared for U.S. Army Corps of Engineers New England District. April 25, 2008.

EPA/USACE (U.S. Environmental Protection Agency/U.S. Army Corps of Engineers). 1998.
Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. —Testing Manual. EPA-823/B-98/004. February 1998.

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APPENDIX A
DAILY FIELD LOGS

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Field Log Form

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

DATE 04/30/08 ^{MPM} **INITIALS** **START TIME** 0745 **STOP TIME** 18:00
FIELD LOCATION: Searsport Harbor Searsport, ME

VESSEL NAME R/V Carolina Skiff

PERSONNEL	AFFILIATION
Mark Avakian	TG&B
John Scanlon	TG&B
Mike McKee	Battelle

WEATHER

TIME	TEMP °C	PRECIP	SKY	WIND
0745	45°F	none	clear	5 kts NW
1226	50°F	none	ptly cloudy	5 kts NW
1908	46°F	none	ptly cloudy	5 kts NW

COMMENTS

surveyed tidal benchmark at public launch ^{or} ~~used to determine~~ ^{USACE benchmark}
 (WGS 84) N 44° 27.187' / W 068° 55.514' elevation ± MLLW
 (NAD 83) N 44.45310 / W 068.92524 +9.75' MLLW @ 08:08
 → installed tide board at Mack Pt. Jetty 6.09' @ 08:52 (not based on MLLW)
 → will cross check this tide board w/ benchmark throughout day
 → surveyed in a benchmark underside of concrete slab at end of SW pier located at Mack Pt +9.57' MLLW elevation
 → compared Mack Pt benchmark to relative tide board → board is -1' off
 add 1' to all tidal measurements throughout the day

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

CHECK dGPS against at least one reference checkpoint at beginning and end of each day.

dGPS Reference Checkpoint Name Steamboat public launch (Searsport, ME)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude	Time
Beginning of day <u>Garmin</u>	<u>NAD83 / Deg Dec Min</u>	<u>44° 27.143</u>	<u>68° 55.492</u>	<u>08:20</u>
<u>Leica</u>	<u>NAD83 / Deg Dec Min</u>	<u>44° 27.1429</u>	<u>68° 55.4929</u>	
End of day <u>Garmin</u>	<u>NAD83 / Deg Dec Min</u>	<u>44° 27.141</u>	<u>68° 55.477</u>	<u>18:00</u>
<u>Leica</u>	<u>NAD83 / Deg Dec Min</u>	<u>44° 27.1414</u>	<u>68° 55.4758</u>	

Comments -

Cross checked Leica MX410 dGPS (TG-8B) with
Battelle's handheld Garmin 12XL

Date/Time 04/30/08 (time noted above) Vessel Carolina Skiff
Unit Make/Model Garmin 12XL / Leica MX410

HEALTH AND SAFETY BRIEFING:

- slips, trips, falls
- decon precautions
- see safety forms

Fathometer check

Piranha Max 15 Fathometer - 11'
Weighted line - 11.3'

* consistently within < 1' difference throughout the day

Field Log Form

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

DATE ^{MPM} INITIALS 05/01/08 START TIME 07:30 STOP TIME 12:30
FIELD LOCATION: _____

Searsport Harbor, Searsport ME

VESSEL NAME Carolina Skiff

PERSONNEL	AFFILIATION
Mark Arakian	
John Scanlon	TGA B
Lenny Perry	/
Mike McKee	Battelle

WEATHER

TIME	TEMP °C	PRECIP	SKY	WIND
07:30	50°F	none	clear	5 kts N
10:45	50°F	none	clear	5 kts W
15:45	50°F	none	overcast	5 kts NW

COMMENTS

- converted vibrocore rig over to 3 5/8" diameter cores for shorter cores
- converted to push core method to improve recovery rate at stations H, I, J
- collected rinsate blanks after last core collection

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

CHECK dGPS against at least one reference checkpoint at beginning and end of each day.

dGPS Reference Checkpoint Name Steamboat public launch (Searsport, ME)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day Garmin Leica	NAD 83 / Deg Dec Min	44° 27.143 N 44° 27.1415 N	68° 55.476 W 68° 55.4758 W
End of day Garmin Leica	↓ ↓	44° 27.184 N 44° 27.1836 N	68° 55.520 W 68° 55.5218 W

Time
03:13
18:20 ①

Comments -

cross checked Leica MX410 dGPS (TG 7B) with
Battelle's handheld Garmin 12XL

Date/Time 05/01/08 Vessel Carolina Skiff

Unit Make/Model Garmin 12XL / Leica MX410

HEALTH AND SAFETY BRIEFING:

- slips, trips & falls
- decon precautions
- over-head hazards

Fathometer check

Piranha Max 15 Fatho - 16'
Weighted Line - 16.0'

① Not at the dock, boat pulled to the top of the ramp

Field Log Form

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

DATE 05/02/08 ^{MSM} INITIALS MSM START TIME 07:45 STOP TIME 12:00
FIELD LOCATION: Penobscott Bay Disposal Sites

VESSEL NAME R/V Moonfish

PERSONNEL	AFFILIATION
Mike McKee	Bethelle
Lenny Perry	TT&B
John Scallon	
Bob Bernstein	Moonfish Captain

WEATHER

TIME	TEMP °F	PRECIP	SKY	WIND
0800	55°F	none	clear	calm
09:45	60°F	none	clear	< 5 kts

COMMENTS

- conducted rinsate blank sampling at IDS after sediment grab collection

Project: Field Sampling and Sediment Testing - Searsport Harbor, ME
Project #: G606441

CHECK dGPS against at least one reference checkpoint at beginning and end of each day.

dGPS Reference Checkpoint Name Belfast public launch
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day <i>moonfish</i> <i>Garmin</i>	NAD83 / Deg Dec. Min	44° 25.735 44° 25.734	069° 00.204 069° 00.206
End of day <i>moonfish</i> <i>Garmin</i>	↓ ↓	44° 25.745 44° 25.747	069° 00.179 069° 00.178

07:30

11:45

Comments -

Date/Time 05/02/08 Vessel R/V Moonfish
Unit Make/Model Raytheon NAV 298 GPS / Garmin 12XL

HEALTH AND SAFETY BRIEFING:

- back injuries
- pinch hazards
- see safety forms

Fatho Check

Furuno FCV-582L 10.4'
Weighted Line 10.9'

APPENDIX B
CORE SAMPLING LOGS

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Coring Field Log		
USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-001		Sampled by: MPM
Site: A		Date: 05/01/03
Reduced Sounding (MLW from chart): Sounding: 46.2 46' / Measured Tide + 2 MLW		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: calm		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Weather: 50°F / Clear / 5 kts W		☐ Water Sampler ☐ Other (specify)
Coordinates Latitude: N 44° 26.1612 Longitude: W 68° 53.9233	① Penetration Depth: 3'	Time: 10:59
	Recovery Depth: 1'	
Coordinates Latitude: N 44° 26.1614 Longitude: W 68° 53.9232	Penetration Depth: 3'	Time: 11:12
	Recovery Depth: 2'	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Material Description: fine silt to soft clay on bottom	Notes: ① poor recovery / core discarded tanker docked at Mack Pt. / another streaming into anchorage	

WD = 45.6'

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-002		Sampled by: MPM
Site: B		Date: 04/30/08
Reduced Sounding (MLW from chart): <i>weighted line / 44' / 43' / +4.0 MLW</i>		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sounding: <i>44' / 43' / +4.0 MLW</i>		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Sea State: <i>choppy 1'</i>		☐ Water Sampler ☐ Other (specify)
Weather: <i>45°F / pty cloudy / winds 15-20 kts NW</i>		
Coordinates Latitude: <i>W P 68°</i> Longitude: <i>44° 26 36.2 N</i> <i>68° 53 59.38 W</i>	Penetration Depth: <i>6.9'</i> Recovery Depth: <i>6.9'</i>	Time: <i>15:25</i>
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth:	Time:
Material Description: <i>olive grey silty clay to firm clay</i>	Notes:	

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-003		Sampled by: MPM
Site: C		Date: 04/30/08
Reduced Sounding (MLW from chart): <i>Weighted Line / Fathoms / Measured Tide</i> Sounding: 38.4' 38' +0.8 MLW		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: 2/3 m		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Weather: 50°F / pty cloudy / winds 5 kts NN		☐ Water Sampler ☐ Other (specify)
Coordinates WP 681	Penetration Depth: 7'	Time: 12:26
Latitude: 44° 26.5171 N	Recovery Depth: 6.8'	
Longitude: 68° 53.9397 W		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Material Description: olive gray silty clay to firm clay	Notes:	

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-004		Sampled by: MPM
Site: D		Date: 04/30/08
Reduced Sounding (MLW from chart): Sounding: 32.4' / 32' / +2.8 MLW <i>Weighted Line / Fathoms / Measured Tide</i>		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: choppy		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube ☐ Water Sampler ☐ Other (specify)
Weather: 45°F / overcast / winds 5-10 NW		
① WD = 32.2'	Coordinates WP 678 Latitude: 44° 26' 87.84" N Longitude: 68° 53' 98.69" W	Penetration Depth: 6.5' Time: 10:35 Recovery Depth: 4'
	Coordinates WP 679 Latitude: 44° 26' 87.76" N Longitude: 68° 53' 98.72" W	Penetration Depth: 7' Time: 10:55 Recovery Depth: 7'
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
	Coordinates Latitude: Longitude:	Penetration Depth: Recovery Depth: Time:
Material Description: olive grey silty clay to firm clay		Notes: ① core not intact / under 60% recovery discarded

Coring Field Log

USACE NAE Project: Searsport Harbor, ME
Project # G606441

Sample ID: HAC-005		Sampled by: MPM	
Site: E		Date: 04/30/08	
Reduced Sounding (MLW from chart): WT Line / Fathoms / Measured Tides Sounding: 46.1' / 47' / +7.6 MLW		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing	
Sea State: choppy		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube	
Weather: 45°F / partly cloudy / Winds 15 kts NW		☐ Water Sampler ☐ Other (specify)	
Coordinates WP 684 Latitude: 44° 26.8621 N Longitude: 68° 53.8131 W		Penetration Depth: 5'	Time: 16:30
		Recovery Depth: 3'	
Coordinates WP 685 Latitude: 44° 26.8635 N Longitude: 68° 53.8120 W		Penetration Depth: 4.5'	Time: 16:42
		Recovery Depth: 2.9'	
Coordinates WP 686 Latitude: 44° 26.8635 N Longitude: 68° 53.8120 W		Penetration Depth: 4.2'	Time: 17:08
		Recovery Depth: 2.6'	
Coordinates WP 692 Latitude: 44° 26.8626 N Longitude: 68° 53.8113 W		Penetration Depth: 4.5'	Time: 13:25
		Recovery Depth: —	
Coordinates Latitude: Longitude:		Penetration Depth: 5'	Time: 13:45
		Recovery Depth: 3.5'	
Coordinates Latitude: Longitude:		Penetration Depth:	Time:
		Recovery Depth:	
Coordinates Latitude: Longitude:		Penetration Depth:	Time:
		Recovery Depth:	
Coordinates Latitude: Longitude:		Penetration Depth:	Time:
		Recovery Depth:	
Material Description: - Olive gray to brown grey @ 1.6' - Soft silt to clay w/ shell hash and organics 1.6'-2.9'		Notes: ① poor recovery - core discarded ② poor recovery - core discarded ③ returned to station E to resample on 05/01/08 → use core 3043	

WD = 47.2'

WD = 47.8'

WD =

Date: 40.8
05/01/08

Tide = 1.1' (3)

1043

2043

3043

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-006		Sampled by: MPM
Site: F		Date: 04/30/08
Reduced Sounding (MLW from chart): <i>weighted line / fathmo / measured tide</i> Sounding: 37.2' / 37' + 2.3 MLW		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: choppy		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Weather: 45°F / overcast / winds S-SE at NW		☐ Water Sampler ☐ Other (specify)
Coordinates WP 680	Penetration Depth: 7.8'	Time: 11:30
Latitude: 44° 26.9653 N	Recovery Depth: 7.4'	
Longitude: 68 53.9541 W		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Coordinates	Penetration Depth:	Time:
Latitude:	Recovery Depth:	
Longitude:		
Material Description:	Notes:	
olive grey silty clay to firm clay		

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-007		Sampled by: MPM
Site: G		Date: 04/30/03
Reduced Sounding (MLW from chart): <i>Weighted Lino / Estmo / Measured Tide</i> Sounding: 45.8' / 45' / +6.6 MLW		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: choppy		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Weather: 45°F / pty cloudy / winds 5-10 NW		☐ Water Sampler ☐ Other (specify)
Coordinates	Latitude: 44° 26.9501 N WP676	Penetration Depth: 6'
Longitude: 68° 53.7050 W		Time: 0950
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Coordinates	Latitude:	Penetration Depth:
Longitude:		Recovery Depth:
Material Description:		Notes:
- silty clay at surface to firm clay at bottom - olive gray to dark gray transition at 2.5'		

Coring Field Log USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-008		Sampled by: MPM
Site: H		Date: 05/01/08
Reduced Sounding (MLW from chart): <i>wt line</i> <i>measured Tide</i> Sounding: 29.3 <i>+2.92 MLW</i>		Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing
Sea State: <i>choppy</i>		Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube
Weather: <i>50°F / overcast</i>		☐ Water Sampler ☐ Other (specify)
Coordinates <i>WP 693</i> Latitude: <i>N 44° 27.0183</i> Longitude: <i>W 68° 53.6165</i>	①	Penetration Depth: 4' Recovery Depth: 2.9' Time: 16:00 ③ MPM
Coordinates <i>694</i> Latitude: <i>N 44° 27.0181</i> Longitude: <i>W 68° 53.6172</i>	②	Penetration Depth: 3.5' Recovery Depth: 3.1' Time: 16:18
Coordinates		Time: 15:00
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Coordinates		
Latitude:		
Longitude:		
Material Description:	Notes: olive gray fine silt to soft clay bottom ① poor recovery - discarded core not recorded on sheet ② Switched from vibrocore to push core to attempt > recovery ③ Time incorrectly logged in military format	

wt =
29.6'

1062
 2062

Coring Field Log		
USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-009	Sampled by: MPM	
Site: I	Date: 05/01/08	
Reduced Sounding (MLW from chart): Sounding: <u>wt. Lino</u> / <u>Fatho</u> / <u>measured Tide</u> 35.5' / 35' / +6.3 MLW	Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing	
Sea State: calm	Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube	
Weather: 50°F / clear / winds 5 kts NW	☐ Water Sampler ☐ Other (specify)	
Coordinates WP 690 Latitude: 44° 27.0441 Longitude: 68° 53.6990	Penetration Depth: 3'	Time: 1015
	Recovery Depth: 2'	
Coordinates WP 695 Latitude: 44° 27.0457 Longitude: 68° 53.6992 ①	Penetration Depth: 4'	Time: 16:05
	Recovery Depth: 3.1'	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Material Description: fine silt sand mix to soft clay on bottom	Notes: ① switched from vibra core to push core to attempt > recovery	

WD =
31'
Tide = 3.1'

1A2

2A2

Coring Field Log		
USACE NAE Project: Searsport Harbor, ME Project # G606441		
Sample ID: HAC-010	Sampled by: MPM	
Site: J	Date: <u>05/01/08</u>	
Reduced Sounding (MLW from chart): Sounding: <u>30' / 30' / +7.2 MLLW</u>	Location Method ☒ dGPS ☐ Loran ☐ Depth ☐ Ranges/Bearing	
Sea State: <u>calm</u>	Sampler Type: ☒ Vibra Core ☐ Gravity Corer ☐ Push Tube	
Weather: <u>50°F / clear / winds 5 kts N</u>	☐ Water Sampler ☐ Other (specify)	
Coordinates <u>WP 689</u> Latitude: <u>N 44° 27.1328</u> Longitude: <u>W 68° 53.7423</u>	Penetration Depth: <u>3'</u>	Time: <u>08:58</u>
	Recovery Depth: <u>2'</u>	
Coordinates <u>WP 676</u> Latitude: <u>N 44° 27.1340</u> Longitude: <u>W 68° 53.7417</u>	Penetration Depth: <u>2'</u>	Time: <u>1631</u>
	Recovery Depth:	
Coordinates <u>WP 697</u> Latitude: <u>44° 27.1335</u> Longitude: <u>68° 53.7405</u>	Penetration Depth: <u>3'</u>	Time: <u>1720</u>
	Recovery Depth: <u>2.4'</u>	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Coordinates Latitude: Longitude:	Penetration Depth:	Time:
	Recovery Depth:	
Material Description: <u>olive grey silt/sand mixture</u> <u>bottom (1.4' to 2.4') transitioning</u> <u>from sand to coarse sand/gravel</u>	Notes: <u>① switched from vibra core (VC) to push core (PC) for improved recovery</u> <u>② push core hitting refusal at 2' pen. gravelly sand bottom → switching to VC</u>	

WD =
24.2'

WD =
26.2'

1.42

2.42

APPENDIX C
SEDIMENT GRAB STATION LOGS

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Station Log for USACE Searsport Harbor, ME Survey HAC Project # G606441

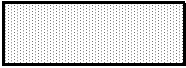
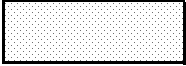
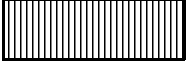
Sample ID Label		Field Measurements	
Station Arrival label		Station Depth (M): 79.3	Weather: calm, clear, 55°F
On Station	Date: 05/02/08	Winds: < 5 kts	Sea: calm
Date: 05/02/08	Time: 08:20	Recorded by: MPM	
Time: 08:20	Belfast Bay Disposal Site		
Sample #1		Grab Size: 0.04 m ² 0.1 m ²	
Off Station	Latitude: 44° 24.351 N	Grab penetration (cm):	
09:15	Longitude: 068° 55.956 W	Redox Depth (cm): N/A	
	Time: 08:28	Sediment Texture:	olive grey silty clay
	Sample ID: HAC-012		no odor
Comments: some polychaetes in the sample			
Sample #2		Grab Size: 0.04 m ² 0.1 m ²	
	Latitude: 44° 24.351 N	Grab penetration (cm):	
	Longitude: 068° 55.908 W	Redox Depth (cm): N/A	
	Time: 08:49	Sediment Texture:	olive grey silty clay
	Sample ID: HAC-013		no odor
Comments: worm tubes			
Sample #3		Grab Size: 0.04 m ² 0.1 m ²	
	Latitude: 44° 24.351 N	Grab penetration (cm):	
	Longitude: 068° 55.712 W	Redox Depth (cm): N/A	
	Time: 09:05	Sediment Texture:	olive grey silty clay
	Sample ID: HAC-014		no odor
Comments: worm tubes			
Sample #4		Grab Size: 0.04 m ²	
	Latitude:	Grab penetration (cm):	
	Longitude:	Redox Depth (cm):	
	Time:	Sediment Texture:	
	Sample ID:		
Comments:			
Sample #5		Grab Size: 0.04 m ²	
	Latitude:	Grab penetration (cm):	
	Longitude:	Redox Depth (cm):	
	Time:	Sediment Texture:	
	Sample ID:		
Comments:			
Remarks:			

Station Log for USACE Searsport Harbor, ME Survey HAC Project # G606441

Sample ID Label		Field Measurements	
On Station Date: 05/02/08 Time: 09:30 Station Arrival label Date: 05/02/08 Time: Isleboro Disposal Site		Station Depth (M): 146' Weather: calm, clear, 55°F Winds: < 5 kts Sea: calm Recorded by: MPM	
Sample #1 off station 11:08 Latitude: 44° 22.258 N Longitude: 068° 55.489 W Time: 09:50 Sample ID: HAC-015 Comments: worm tubes		Grab Size: 0.04-m ² 0.1m ² Grab penetration (cm): Redox Depth (cm): N/A Sediment Texture: olive grey clayey silt thin layer of brown silt no odor	
Sample #2 Latitude: 44° 22.265 Longitude: 68° 55.499 Time: 10:05 Sample ID: HAC-016 Comments: worm tubes		Grab Size: 0.04-m ² Grab penetration (cm): Redox Depth (cm): Sediment Texture: olive grey clayey silt very thin layer of brown silt no odor	
Sample #3 Latitude: 44° 22.276 Longitude: 68° 55.537 Time: 10:20 Sample ID: HAC-017 Comments: worm tubes		Grab Size: 0.04-m ² Grab penetration (cm): Redox Depth (cm): Sediment Texture: olive grey clayey silt thin layer of brown silt no odor	
Sample #4 Latitude: Longitude: Time: Sample ID: Comments:		Grab Size: 0.04-m ² Grab penetration (cm): Redox Depth (cm): Sediment Texture:	
Sample #5 Latitude: Longitude: Time: Sample ID: Comments:		Grab Size: 0.04-m ² Grab penetration (cm): Redox Depth (cm): Sediment Texture:	
Remarks: Decon grab after arriving on station strong current Decon and rinse collection on site, after samples collected			

APPENDIX D
CORE PROCESSING LOGS

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<u>LITHOLOGY</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
	GM	Silty gravels, gravel and silt and sand mixtures
	SW	Well-graded sands, gravelly sands
	SP	Poorly-graded sands, gravelly sands
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
	ML	Silts and very fine sands, silty or clayey fine sands, or clayey silts, with slight plasticity.
	CH	Clays of high plasticity, fat clays
	CL	Lean clays, lean clays with sand, etc.

	Shell hash
	Peat/organic matter

CONSISTENCY

Penetration of thumb:

<0.25 cm = hard (H)

0.25 - 2.0 cm = firm (F)

2.0 - 4.0 cm = soft (S)

>4.0 cm = very soft (VS)

CEMENTION

N = not cemented

W = weakly cemented

M = Moderately cemented

S = Strongly cemented

STRUCTURE

H = Homogeneous

S = Stratified

L = Laminated

M = Mottled

HCl REACTION

N = None

W = Weak

S = Strong

MAXIMUM PARTICLE SIZE

SC = Small Cobble

CP = Coarse Pebble

MP = Medium Pebble

SP = Small Pebble

CS = Coarse Sand

MS = Medium Sand

FS = Fine Sand

VFS = Very Fine Sand

Z = Silt

ODOR

N = None

H = Hydrocarbon

S or HS = Sulfide

COLOR

g or gr. = grey

or. = orange

gm. = green

dk = dark

lt = light

brwn = brown

blk = black



Project #: **G606441**
Project Name: **Searsport Harbor**
Location: **Searsport, ME**
Client: **USACE NAE**

Vessel: **R/V Carolina Skiff**
Chief Scientist: **Michael McKee**
Survey Duration (Date & Time): **4/30/08 to 5/2/08**

Station ID:	A	Time On Station:	11:12	Attempt:	Feet	
Station Descriptor:		Date:	05/01/08	1	Total Penetration:	3'
Core Sample ID:	HAC-001	Northing (NAD 83):	44° 26.1614		Recovery:	<1'
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.9232		Time of collection:	10:59
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:	3'
		Water Depth (ft):	45.6'		Recovery:	2'
		Tide (ft):	+5.2'		Time of collection:	11:12

Time Depart Station:

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey-silt ↓ silty-clay	dk olive gr. ↓ olive gr.	soft ↓ mod. firm	fine ↓	none ↓	HAC-001 0'-1' HAC-001 1'-2'	0 - 0.8': soft clayey silt (dark olive grey); transition to silty clay of moderate firmness; 0.8 - 2' olive grey silty clay
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled from top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).



Project #: G606441
Project Name: Searsport Harbor
Location: Searsport, ME
Client: USACE NAE

Vessel: R/V Carolina Skiff
Chief Scientist: Michael McKee
Survey Duration (Date & Time): 4/30/08 to 5/2/08

Station ID:	B	Time On Station:	15:25	Attempt:	Feet
Station Descriptor:		Date:	04/30/08	1	Total Penetration: 6.9'
Core Sample ID:	HAC-002	Northing (NAD 83):	44° 26.3652		Recovery: 6.9'
Logged by:	MPM/MRF	Easting (NAD 83):	68° 53.8938		Time of collection: 15:25
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:
		Water Depth (ft):	44'		Recovery:
		Tide (ft):	+4.0'		Time of collection:
Time Depart Station:					

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey-silt silty-clay	dk olive gr. olive gr.	soft mod. firm	fine	slight H ₂ S	HAC-002-0-1'	0 - 0.6': soft clayey silt (dark olive grey) with slight H ₂ S odor; 0.6 - 6.9' transition from clayey silt to silty clay (olive grey - moderately firm); organic matter at 2'
4	4							HAC-002-1'-2'	
6	6							HAC-002-2'-7.3'	
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).



Project #: G606441
Project Name: Searsport Harbor
Location: Searsport, ME
Client: USACE NAE

Vessel: R/V Carolina Skiff
Chief Scientist: Michael McKee
Survey Duration (Date & Time): 4/30/08 to 5/2/08

Station ID:	C	Time On Station:	12:26	Attempt:	Feet	
Station Descriptor:		Date:	04/30/08	1	Total Penetration:	7'
Core Sample ID:	HAC-003	Northing (NAD 83):	44° 26.5171		Recovery:	6.9'
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.9397		Time of collection:	12:26
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:	
		Water Depth (ft):	38.4'		Recovery:	
		Tide (ft):	+0.8'		Time of collection:	
Time Depart Station:						

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey-silt silty-clay	dk olive gr. olive gr.	soft mod. firm	fine	slight H ₂ S	HAC-003-0-1'	0 - 0.6': soft clayey silt (dark olive grey); transition to silty clay (olive grey); 0.6 - 6.9' moderately firm silty clay (olive grey) with piece of wood at 5.8'; slight H ₂ S odor on top
4	4							HAC-003-1'-2'	
6	6							HAC-003-2'-6.9'	
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled from top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).



Project #: G606441
Project Name: Searsport Harbor
Location: Searsport, ME
Client: USACE NAE

Vessel: R/V Carolina Skiff
Chief Scientist: Michael McKee
Survey Duration (Date & Time): 4/30/08 to 5/2/08

Station ID:	D	Time On Station:	10:55	Attempt:	Feet
Station Descriptor:		Date:	04/30/08	1	Total Penetration: 6.5'
Core Sample ID:	HAC-004	Northing (NAD 83):	44° 26.8776		Recovery: 4'
Logged by:	MPM/MRF	Easting (NAD 83):	68° 53.9872		Time of collection: 10:35
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration: 7'
		Water Depth (ft):	32.2'		Recovery: 6.9'
		Tide (ft):	+2.8'		Time of collection: 10:55

Time Depart Station:

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	silt	dk olive gr.	soft	fine	slight H ₂ S	HAC-004-0'-1'	0 - 0.3': soft clayey silt (dark olive grey) - slight H ₂ S odor; 0.3 - 6.9' silty clay moderately firm to firm (olive grey); fragments of wood at 4.6'
			silty-clay	olive gr.	mod. firm			HAC-004-1'-2'	
4	4							HAC-004-2'-bottom	
6	6				firm				
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled at top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).



Project #: **G606441**
Project Name: **Searsport Harbor**
Location: **Searsport, ME**
Client: **USACE NAE**

Vessel: **R/V Carolina Skiff**
Chief Scientist: **Michael McKee**
Survey Duration (Date & Time): **4/30/08 to 5/2/08**

Station ID:	<u>E</u>	Time On Station:	<u>13:45</u>	Attempt:	<u>Feet</u>	
Station Descriptor:		Date:	<u>05/01/08</u>	<u>5</u>	Total Penetration:	<u>5'</u>
Core Sample ID:	<u>HAC-005</u>	Northing (NAD 83):	<u>44° 26.8628</u>		Recovery:	<u>3.5'</u>
Logged by:	<u>MPM/JMF</u>	Easting (NAD 83):	<u>68° 53.8118</u>		Time of collection:	<u>13:45</u>
Collection Mechanism:	<u>Vibracore</u>	GPS Accuracy:			Total Penetration:	
		Water Depth (ft):	<u>40.8'</u>		Recovery:	
		Tide (ft):	<u>+1.1'</u>		Time of collection:	
Time Depart Station:						

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	silty-clay	olive gr.	mod. firm	fine	none	HAC-005-0'-1'	0 - 1': moderately firm clayey silt to silty clay (olive grey color); 1 - 3.4' moderately firm silty clay (olive grey) with detritus layer (dark brown) from 1.4 - 1.8' and wood chips, shell, and detritus from 2.7 - 3.4'; firm clay (light grey) from 3.4 - 3.6'
			organics	dk brwn				HAC-005-1'-2'	
4	4	CH	clayey-silt	olive gr.				HAC-005-2'-bottom	
			organics	dk brwn	firm				
			clay	light gr.					
6	6								
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot section for initial grain size testing (conducted 05/06/08).



Project #: G606441
Project Name: Searsport Harbor
Location: Searsport, ME
Client: USACE NAE

Vessel: R/V Carolina Skiff
Chief Scientist: Michael McKee
Survey Duration (Date & Time): 4/30/08 to 5/2/08

Station ID:	F	Time On Station:	11:30	Attempt:	Feet
Station Descriptor:		Date:	04/30/08	1	Total Penetration: 7.8'
Core Sample ID:	HAC-006	Northing (NAD 83):	44° 26.9653		Recovery: 7.3'
Logged by:	MPM/MRF	Easting (NAD 83):	68° 53.9541		Time of collection: 11:30
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:
		Water Depth (ft):	37.2'		Recovery:
		Tide (ft):	+2.3'		Time of collection:
Time Depart Station:					

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey-silt	dk olive gr.	soft	fine	slight H ₂ S	HAC-006-0-1.9'	0 - 1.9': soft clayey silt (dark olive grey); 1.9 - 3.6' silty clay (olive grey); horizon at 3.6' moderately firm; 3.6 - 7.3' native light blue/grey clay - firm; slight H ₂ S odor in top foot
4	4	CH	silty-clay	olive gr.	mod. firm			HAC-006-1.9-3.6'	
6	6		clay	lt blue/gr.	firm			HAC-006-3.6'-7.3'	
8	8								
10	10								
12	12								

Comments: Horizon at 3.6' / Subsampled 0 - 1.9', 1.9 - 3.6', and 3.6 - 7.3' (per discussion with Cathy Rogers).



Project #: G606441
Project Name: Searsport Harbor
Location: Searsport, ME
Client: USACE NAE

Vessel: R/V Carolina Skiff
Chief Scientist: Michael McKee
Survey Duration (Date & Time): 4/30/08 to 5/2/08

Station ID:	G	Time On Station:	9:50	Attempt:	Feet
Station Descriptor:		Date:	04/30/08	1	Total Penetration:
Core Sample ID:	HAC-007	Northing (NAD 83):	44° 26.9501		Recovery:
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.7050		Time of collection:
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:
		Water Depth (ft):	45.8'		Recovery:
		Tide (ft):	+6.6'		Time of collection:
Time Depart Station:					

As Sampled depth below mudline (ft)	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML ↓ CH	silty-clay ↓ firm clay	olive gr. ↓ lt gr. ↓ dark gr. lt gr. bands of dark gr.	mod. firm ↓ firm	fine	none	HAC-007-0'-1'	0 - 1' moderately firm silty clay (olive grey); transition to firm clay (light gray);
4	4							HAC-007-1'-2'	1 - 5.2' firm clay with bands of dark grey/black at 2.3 - 2.7', 4.3', 4.5', 4.7', and 5'.
6	6							HAC-007-2'-bottom	
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot section for initial grain size testing (conducted 05/06/08).



Project #: **G606441**
Project Name: **Searsport Harbor**
Location: **Searsport, ME**
Client: **USACE NAE**

Vessel: **R/V Carolina Skiff**
Chief Scientist: **Michael McKee**
Survey Duration (Date & Time): **4/30/08 to 5/2/08**

Station ID:	H	Time On Station:	15:18	Attempt:	Feet	
Station Descriptor:		Date:	05/01/08	1	Total Penetration:	4'
Core Sample ID:	HAC-008	Northing (NAD 83):	44° 27.0181		Recovery:	2.9'
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.6172		Time of collection:	15:00
Collection Mechanism:	Push Core	GPS Accuracy:		2	Total Penetration:	3.5'
		Water Depth (ft):	29.6'		Recovery:	3.1'
		Tide (ft):	+2.9'		Time of collection:	15:18

Time Depart Station:

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey silt w/ some FS silty-clay	dk olive gr. ↓ olive gr.	mod. ↓ mod. firm	fine ↓	slight H ₂ S ↓	HAC-008-0'-1'	0 - 0.7': clayey silt with trace of fine sands;
								HAC-008-1'-2'	0.7 - 1.7' gradual transition from clayey silt to silty clay;
								HAC-008-2'-3.2'	shell hash at 0.5' (gravel noted when subsampling);
									organic matter at 2.4'; color transition from dark olive
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot section for initial grain size testing (conducted 05/05/08).



Project #: **G606441**
Project Name: **Searsport Harbor**
Location: **Searsport, ME**
Client: **USACE NAE**

Vessel: **R/V Carolina Skiff**
Chief Scientist: **Michael McKee**
Survey Duration (Date & Time): **4/30/08 to 5/2/08**

Station ID:	<u>I</u>	Time On Station:	<u>16:05</u>	Attempt:	<u>Feet</u>
Station Descriptor:		Date:	<u>05/01/08</u>	<u>1</u>	Total Penetration: <u>3'</u>
Core Sample ID:	<u>HAC-009</u>	Northing (NAD 83):	<u>44° 27.0457</u>		Recovery: <u>2'</u>
Logged by:	<u>MPM/JMF</u>	Easting (NAD 83):	<u>68° 53.6992</u>		Time of collection: <u>10:15</u>
Collection Mechanism:	<u>Push Core</u>	GPS Accuracy:	<u>2</u>		Total Penetration: <u>4'</u>
		Water Depth (ft):	<u>31'</u>		Recovery: <u>3.1'</u>
		Tide (ft):	<u>+3.1'</u>		Time of collection: <u>16:05</u>
Time Depart Station:					

As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML	clayey silt	olive gr.	soft	fine	slight H ₂ S	HAC-009-0'-1'	0 - 3.1' gradual transition from soft clayey silt to moderately firm silty clay; olive grey throughout; slight H ₂ S odor
								HAC-009-1'-2'	
			silty-clay		mod. firm			HAC-009-2-3.1'	
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).



Project #: **G606441**
Project Name: **Searsport Harbor**
Location: **Searsport, ME**
Client: **USACE NAE**

Vessel: **R/V Carolina Skiff**
Chief Scientist: **Michael McKee**
Survey Duration (Date & Time): **4/30/08 to 5/2/08**

Station ID:	J	Time On Station:	8:58	Attempt:	Feet
Station Descriptor:		Date:	05/01/08	1	Total Penetration: 3'
Core Sample ID:	HAC-010	Northing (NAD 83):	44° 27.1328		Recovery: 2'
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.7423		Time of collection: 8:58
Collection Mechanism:	Vibracore	GPS Accuracy:		2	Total Penetration:
		Water Depth (ft):	30'		Recovery:
		Tide (ft):	+7.2'		Time of collection:
Time Depart Station:					

As Sampled depth below mudline (ft)	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2	ML ↓ SP	clayey silt ↓ silty clay w/ sand gravel	dk olive gr. olive gr. ↓	soft mod. firm ↓ coarse	gravel	slight H ₂ S ↓	HAC-010-0'-1' HAC-010-1'-2'	0 - 1' transition from silty/clayey sand (soft/dark olive grey) to moderately firm silty clay with coarse sand (olive grey); 1 - 2'; silt/clay/sand to coarse sand and gravel; large piece of gravel (~2" wide) at 1.5'
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: No defined horizon/Subsampled top 1' and 2nd foot for initial grain size testing (conducted 05/06/08).

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE			

Station ID: <u>A</u>	Time On Station: <u>11:12</u>	Attempt: <u>2</u>	Feet <u>2'</u>
Station Descriptor: _____	Date: <u>05/01/08</u>	1	Total Penetration: <u>3'</u>
Core Sample ID: <u>HAC-001</u>	Northing (NAD 83): <u>44° 26.1614</u>		Recovery: <u>2'</u>
Logged by: <u>MPM/JMF</u>	Easting (NAD 83): <u>68° 53.9232</u>		Time of collection: <u>11:12</u>
Collection Mechanism: <u>Vibracore</u>	GPS Accuracy: _____	2	Total Penetration: _____
	Water Depth (ft): <u>45.6'</u>		Recovery: _____
	Tide (ft): <u>+5.2'</u>		Time of collection: _____
Time Depart Station: _____			

As Sampled depth below mudline (ft)*	Adjusted Depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
			clayey silt	dark olive grey	soft	fine	none		0-0.8' soft clayey silt (dark olive grey) transition to silty clay of moderate firmness 0.8-2' olive grey silty clay
2	2		↓ silty clay	olive grey	mod firm				
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon / subsampled from top 1' and 2nd foot for initial grain size testing (conducted 05/06/08)

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE			

Station ID: <u> B </u>	Time On Station: <u> 15:25 </u>	Attempt: <u> 1 </u>	Feet <u>6.9'</u>
Station Descriptor: <u> </u>	Date: <u> 04/30/08 </u>	1	Total Penetration: <u> 6.9' </u>
Core Sample ID: <u> HAC-002 </u>	Northing (NAD 83): <u> 44° 26.3652 </u>		Recovery: <u> 6.9' </u>
Logged by: <u> MPM/MRF </u>	Easting (NAD 83): <u> 68° 53.8938 </u>		Time of collection: <u> 15:25 </u>
Collection Mechanism: <u> Vibracore </u>	GPS Accuracy: <u> </u>	2	Total Penetration: <u> </u>
	Water Depth (ft): <u> 44' </u>		Recovery: <u> </u>
	Tide (ft): <u> +4.0' </u>		Time of collection: <u> </u>
Time Depart Station: <u> </u>			

As Sampled depth below mudline (ft)*	Adjusted Depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
			clayey silt	dark olive grey	soft				0-0.6' soft clayey silt (dark olive grey) w/ slight H ₂ S odor 0.6-6.9' transition from clayey silt to silty clay olive grey - moderately firm organic matter @ 2'
			↓ silty clay	↓ olive grey	↓ mod firm		slight H ₂ S		
2	2								
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon - subsampled top 1' and 2nd foot for initial grain size testing (conducted 05/06/08)

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE			

Station ID: <u>D</u>	Time On Station: <u>10:55</u>	Attempt: <u>2</u>	Feet <u>6.9'</u>
Station Descriptor:	Date: <u>04/30/08</u> ☒	Total Penetration: <u>6.5'</u>	
Core Sample ID: <u>HAC-004</u>	Northing (NAD 83): <u>44° 26.8776</u>	Recovery: <u>4'</u>	
Logged by: <u>MPM/MRF</u>	Easting (NAD 83): <u>68° 53.9872</u>	Time of collection: <u>10:35</u>	
Collection Mechanism: <u>Vibracore</u>	GPS Accuracy: <u>2</u>	Total Penetration: <u>7'</u>	
	Water Depth (ft): <u>32.2'</u>	Recovery: <u>6.9'</u>	
	Tide (ft): <u>+2.8'</u>	Time of collection: <u>10:55</u>	
Time Depart Station:			

As Sampled depth below mudline (ft)+	Adjusted Depth below mudline (ft)+	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
			silt ↓ silty clay	dark olive grey ↓ olive grey	soft ↓ mod firm ↓ firm	fine	slight H ₂ S		0.-0.3' soft clayey silt (dark olive grey) slight H ₂ S odor 0.3-6.9' silty clay moderately firm to firm olive grey fragments of wood @ 4.6'
2	2								
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon - subsampled @ top 1' and 2nd foot for initial grain size testing (conducted on 05/06/08)

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE			

Station ID: <u>E</u>	Time On Station: <u>13:45</u>	Attempt: <u>#5</u>	Feet <u>3.6'</u>
Station Descriptor:	Date: <u>05/01/08</u> ✕	Total Penetration: <u>5'</u>	
Core Sample ID: <u>HAC-005</u>	Northing (NAD 83): <u>44°26.8628</u>	Recovery: <u>3.5'</u>	
Logged by: <u>MPM/JMF</u>	Easting (NAD 83): <u>68°53.8118</u>	Time of collection: <u>13:45</u>	
Collection Mechanism: <u>Vibracore</u>	GPS Accuracy: ✕	Total Penetration:	
	Water Depth (ft): <u>40.8'</u>	Recovery:	
	Tide (ft): <u>+1.1'</u>	Time of collection:	
Time Depart Station:			

As Sampled depth below mudline (ft)+	Adjusted Depth below mudline (ft)+	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
			silty clay	olive grey	mod firm				0-1' moderately firm clayey silt to silty clay
			↓						olive grey color
2	2		organic clayey silt	dark brown					1-3.4' moderately firm silty clay (olive grey)
			organic clay	dark brown					w/ detritus layer (dark brown) from 1.4'-1.8' and wood chips shell and detritus from 2.7-3.4'
4	4			light grey	firm				firm clay (light grey) from 3.4'-3.6'
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon / subsampled top 1' and 2nd foot section for initial grain size testing (conducted 05/06/08)

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE			

Station ID: F	Time On Station: 11:30	Attempt: 1	Feet 7.3'
Station Descriptor:	Date: 04/30/08	1	Total Penetration: 7.8'
Core Sample ID: HAC-006	Northing (NAD 83): 440 26 9653		Recovery: 7.3'
Logged by: MM/MRF	Easting (NAD 83): 680 53 9541		Time of collection: 11:30
Collection Mechanism: Vibracore	GPS Accuracy:	2	Total Penetration:
	Water Depth (ft): 37.2'		Recovery:
	Tide (ft): +2.3'		Time of collection:
Time Depart Station:			

As Sampled depth below mudline (ft)	Adjusted Depth below mudline (ft)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
			day silt	dark olive grey	soft		slight H ₂ S		0-1.9' soft clayey silt (dark olive grey) 1.9'-3.6' silty clay (olive grey) horizon @ 3.6' - mod firm 3.6-7.3' native light blue/grey clay-firm slight H ₂ S odor in top foot
2	2		↓ silty clay	↓ olive grey	↓ mod firm				
4	4		clay	light blue/grey	firm				
6	6								
8	8								
10	10								
12	12								

① MFM

Comments: horizon at 3.6' / subsampled ~~0-3.6'~~ and ~~3.6-7.3'~~
 0-1.9', 1.9-3.6', 3.6-7.3'

① MFM 05/06/08 - Per discussion w/ Cathy Rogers

Battelle The Business of Innovation		Project #: G606441 Project Name: Searsport Harbor Location: Searsport, ME Client: USACE NAE		Vessel: R/V Carolina Skiff Chief Scientist: Michael McKee Survey Duration (Date & Time): 04/30/08-05/02/08	
Station ID: <u>G</u>		Time On Station: <u>09:50</u>		Attempt: <u>1</u>	
Station Descriptor:		Date: <u>04/30/08</u>		Total Penetration: <u>6'</u>	
Core Sample ID: <u>HAC-007</u>		Northing (NAD 83): <u>440 26.9501</u>		Recovery: <u>5.2'</u>	
Logged by: <u>MM/JMF</u>		Easting (NAD 83): <u>680 53.7050</u>		Time of collection: <u>09:50</u>	
Collection Mechanism: <u>Vibracore</u>		GPS Accuracy:		Total Penetration:	
		Water Depth (ft): <u>45.8'</u>		Recovery:	
		Tide (ft): <u>+6.6'</u>		Time of collection:	
Time Depart Station:					

As Sampled depth below mudline (ft)	Adjusted Depth below mudline (ft)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2		silty clay ↓ firm clay	olive grey ↓ light grey dark grey	mod firm ↓ firm	fine			0-1' moderately firm silty clay (olive grey) transition to firm clay (light grey) 1-5.2' firm clay w/ bands of dark grey/black at 2.3-2.7', 4.3', 4.5', 4.7' and 5'
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon / subsampled top 1' and 2nd foot sections for initial grain size testing (conducted 05/06/08)

Battelle The Business of Innovation		Project #: G606441		Vessel: R/V Carolina Skiff	
		Project Name: Searsport Harbor		Chief Scientist: Michael McKee	
		Location: Searsport, ME		Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client: USACE NAE		0 15:18	

Station ID: <u>H</u>	Time On Station: <u>16:18</u>	Attempt: <u>2 of 2</u>	Feet <u>3.1'</u>
Station Descriptor: _____	Date: <u>05/01/08</u>	Total Penetration: <u>4'</u>	
Core Sample ID: <u>HAC-008</u>	Northing (NAD 83): <u>440 27.0181</u>	Recovery: <u>2.9' ①</u>	
Logged by: <u>MPM/JMF</u>	Easting (NAD 83): <u>680 53.6172</u>	Time of collection: <u>15:00</u>	
Collection Mechanism: <u>Vibracore</u>	GPS Accuracy: <u>2</u>	Total Penetration: <u>3.5'</u>	
<u>push core</u>	Water Depth (ft): <u>29.6'</u>	Recovery: <u>3.1' ①</u>	
	Tide (ft): <u>+2.9'</u>	Time of collection: <u>15:18</u>	
Time Depart Station: _____			

As Sampled depth below mudline (ft)*	Adjusted Depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2		1.7'	dk olive grey ↓ olive grey	moderate firm	Fine 0.4'	light H ₂ S	0.7'	0-0.7' clayey silt w/ trace fine sands 0.7-1.7' gradual transition from clayey silt to silty clay
4	4								shell hash @ 0.5' → gravel noted when subsampling organic matter @ 2.4' color transition from dark olive
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon / subsampled top 1' and 2nd foot section for initial grain size (conducted on 05/05/08)

① MPM 05/12/08 - military hint incorrectly logged on core sampling form

Battelle The Business of Innovation		Project #:	G606441	Vessel:	R/V Carolina Skiff
		Project Name:	Searsport Harbor	Chief Scientist:	Michael McKee
		Location:	Searsport, ME	Survey Duration (Date & Time): 04/30/08-05/02/08	
		Client:	USACE NAE		

Station ID:	<u>I</u>	Time On Station:	<u>16:05</u>	Attempt:	<u>2</u>	Feet	<u>3.1'</u>
Station Descriptor:		Date:	<u>05/01/08</u> ✓	Total Penetration:	<u>3'</u>		
Core Sample ID:	<u>HAC-009</u>	Northing (NAD 83):	<u>44° 27.0457</u>	Recovery:	<u>2'</u>		
Logged by:	<u>MDM/JMF</u>	Easting (NAD 83):	<u>68° 53.6992</u>	Time of collection:	<u>10:15</u>		
Collection Mechanism:	<u>Vibracore</u> <u>push core</u>	GPS Accuracy:	<u>2</u>	Total Penetration:	<u>4'</u>		
		Water Depth (ft):	<u>31'</u>	Recovery:	<u>3.1'</u>		
		Tide (ft):	<u>+3.1'</u>	Time of collection:	<u>16:05</u>		
Time Depart Station:							

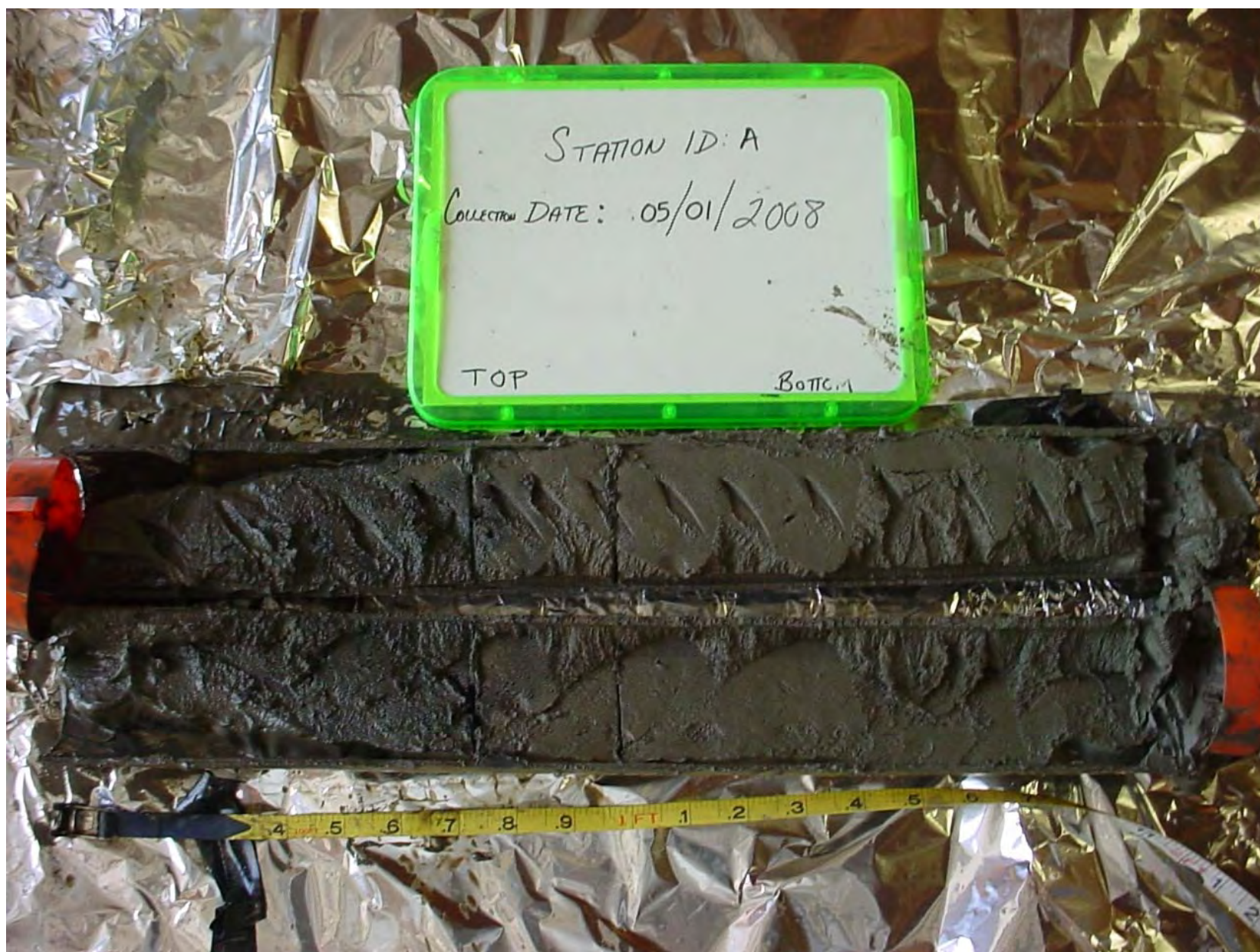
As Sampled depth below mudline (ft) +	Adjusted Depth below mudline (ft) +	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2	2		clayey silt ↓ silty clay	olive grey	soft ↓ mod. firm	fine	slight H ₂ S odor		0-3.1' gradual transition from soft clayey silt to moderately firm silty clay - olive grey throughout - slight H ₂ S odor
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon/ subsampled top 1' and 2nd ft for initial grain size testing (conducted 05/06/08)

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APPENDIX E
CORE PHOTOS

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STATION ID: B

COLLECTION DATE: 04/30/2008

TOP

BOTTOM



STATION ID: B

COLLECTION DATE: 04/30/2008

TOP

BOTTOM



STATION ID: B

COLLECTION DATE: 04/30/2008

TOP

BOTTOM

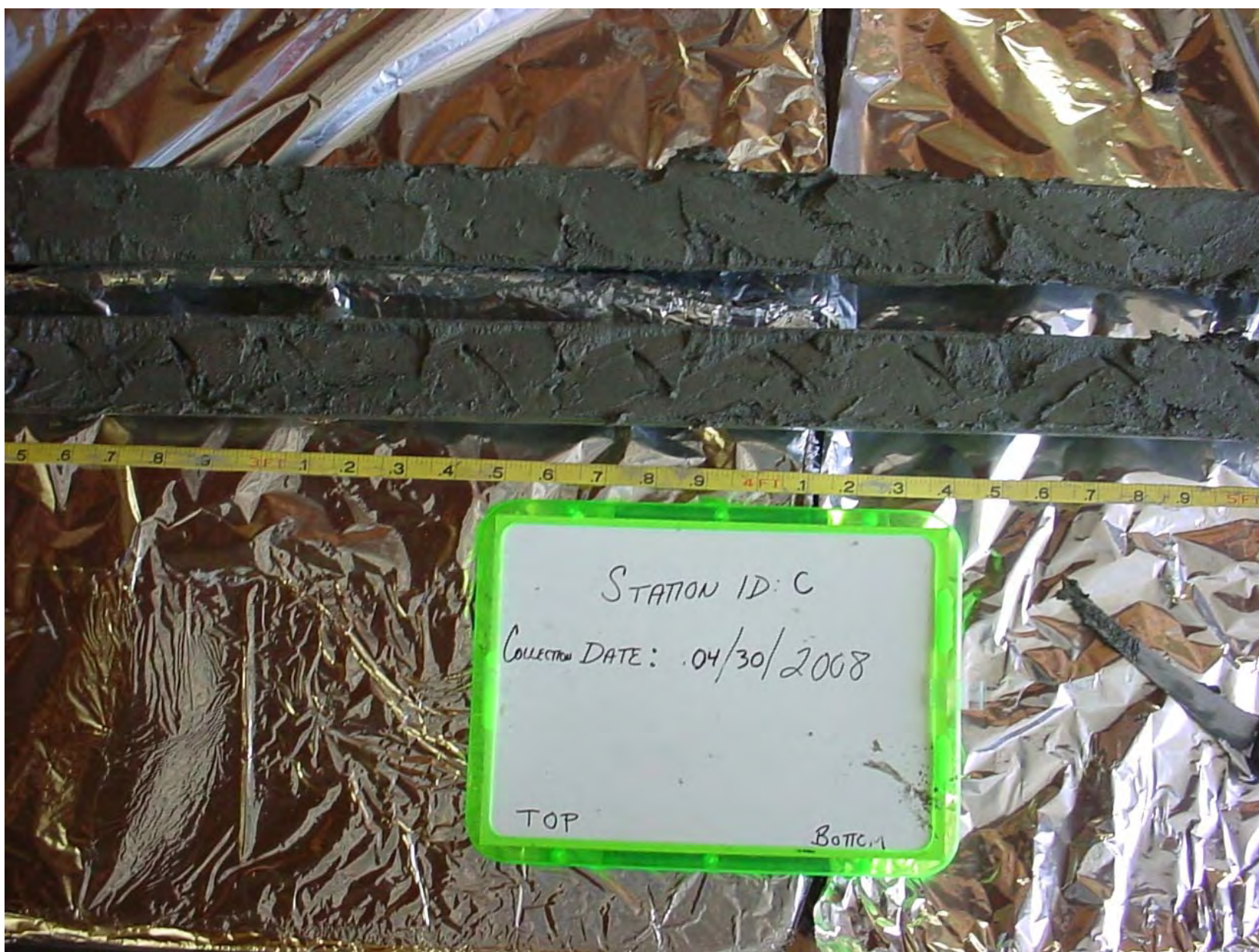


STATION ID: C

Collection DATE: 04/30/2008

TOP

Bottom

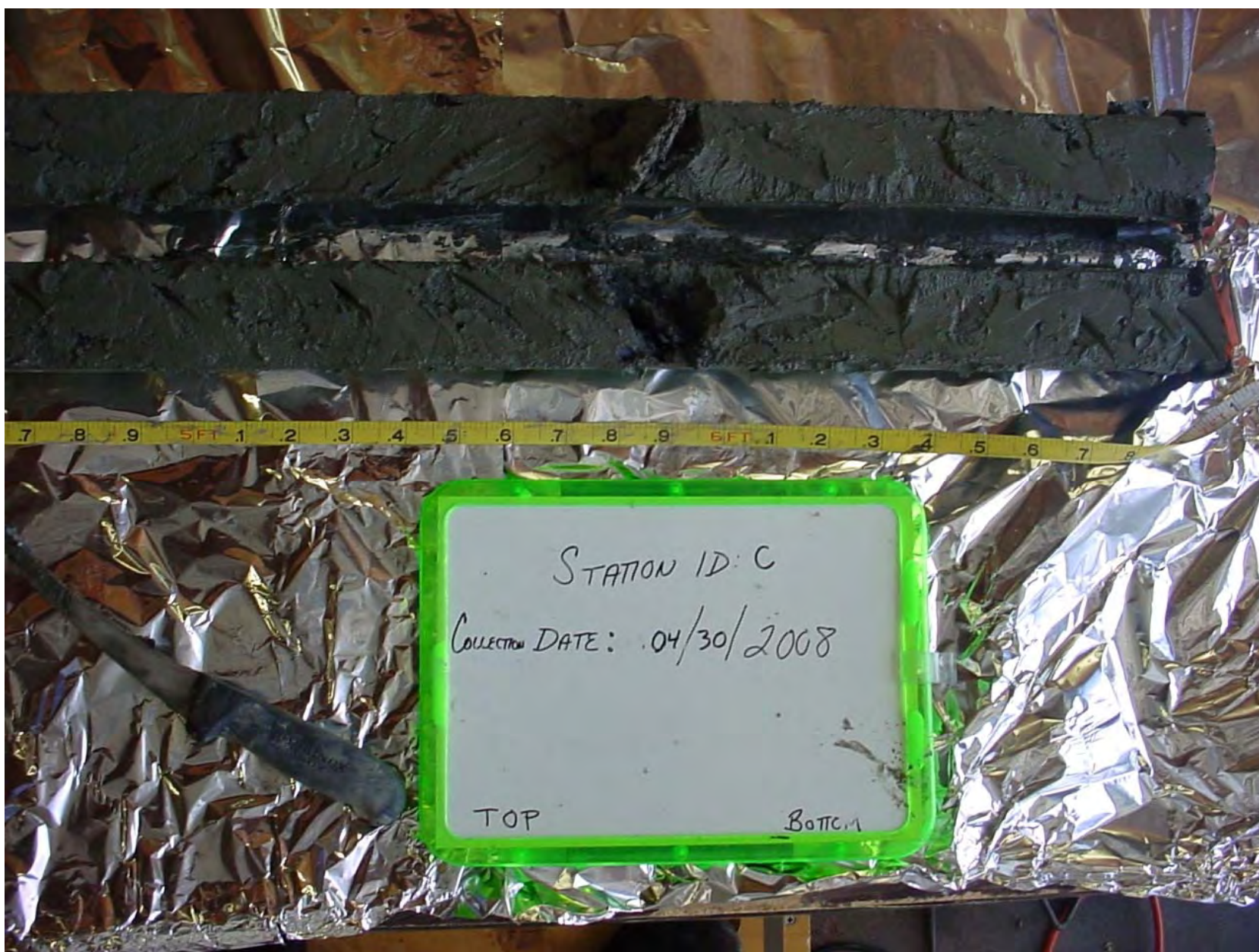


STATION ID: C

COLLECTION DATE: 04/30/2008

TOP

BOTTOM



STATION ID: C

COLLECTION DATE: 04/30/2008

TOP

BOTTOM

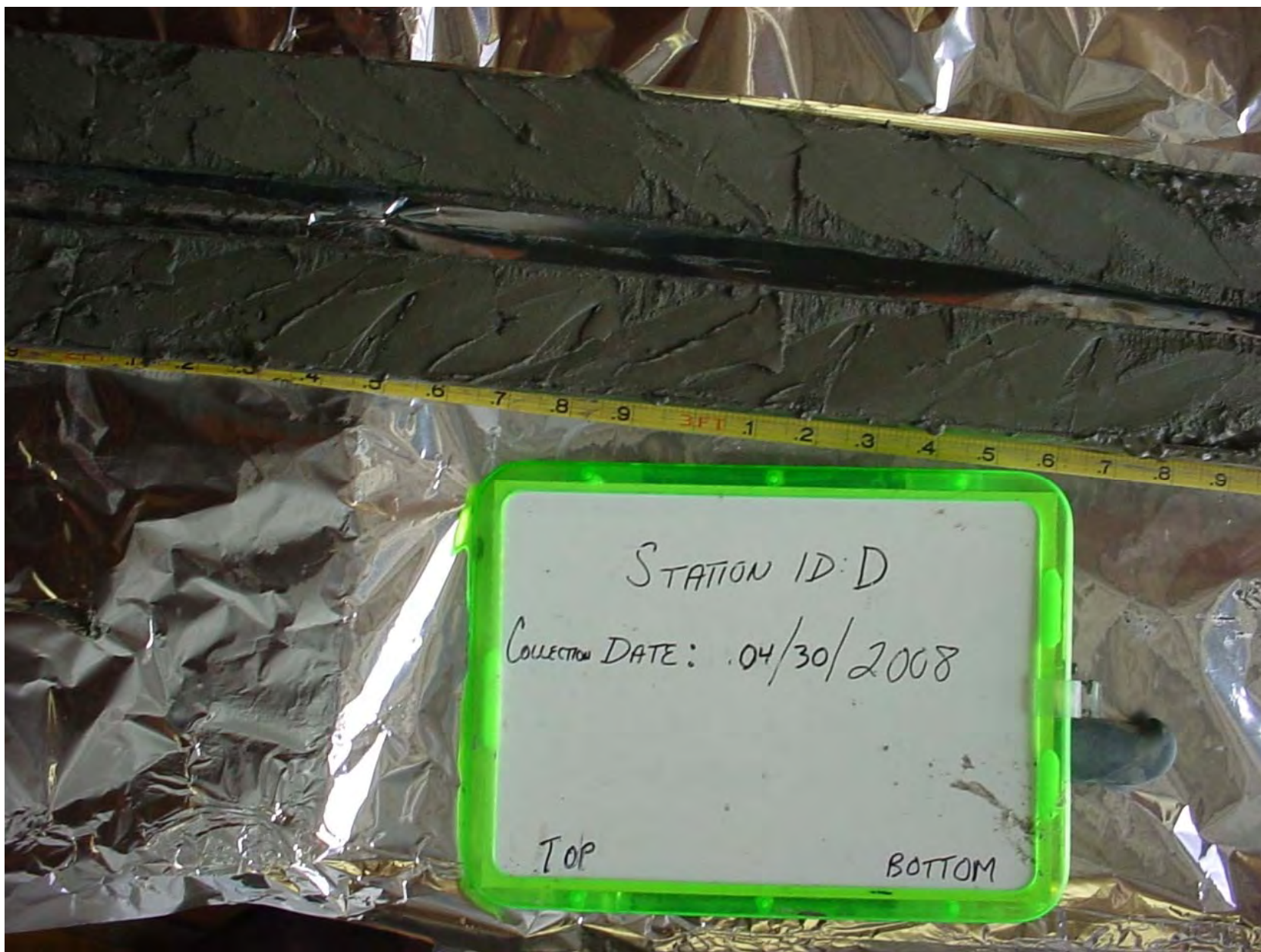


STATION ID: D

COLLECTION DATE: 04/30/2008

TOP

BOTTOM

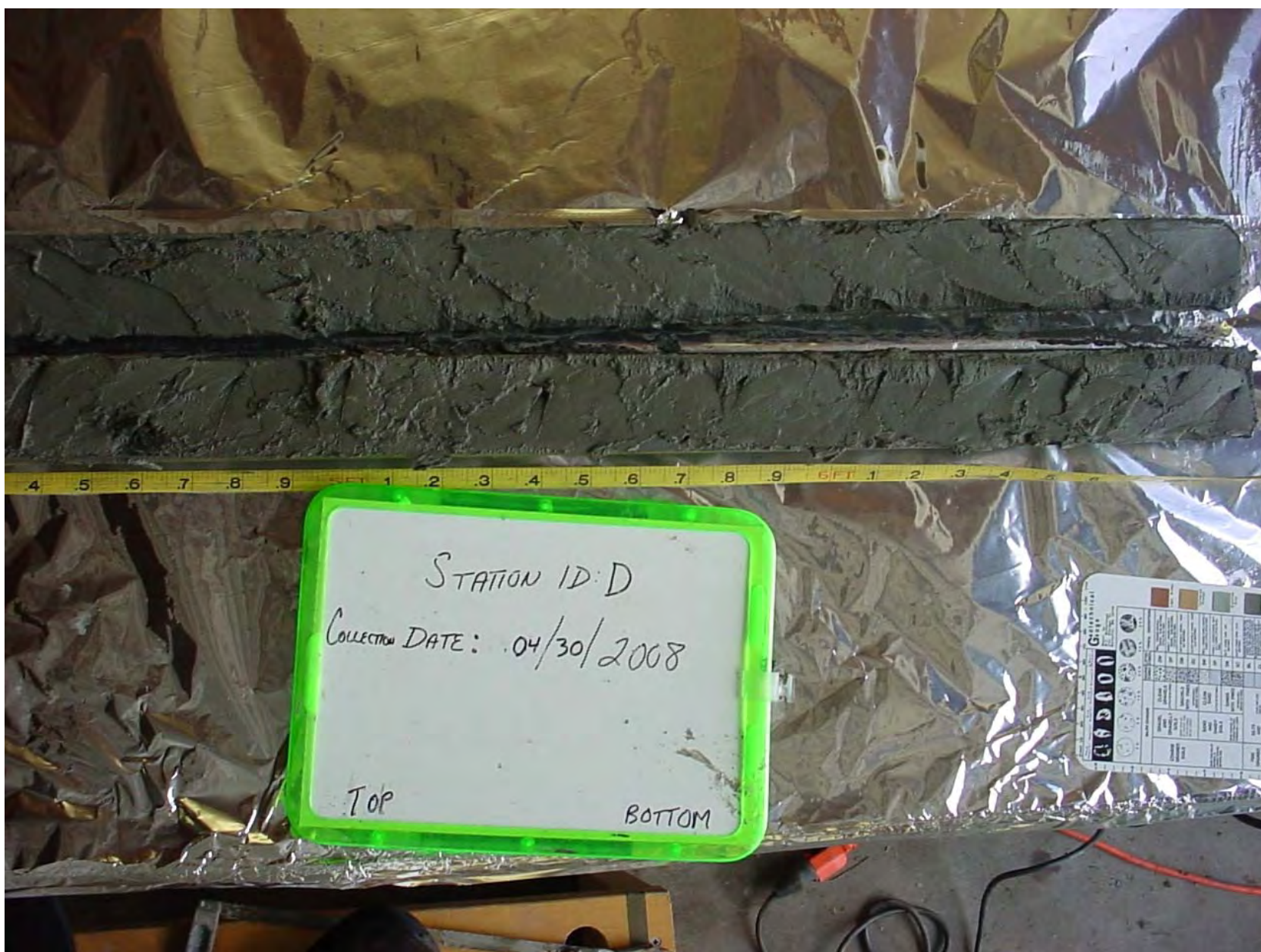


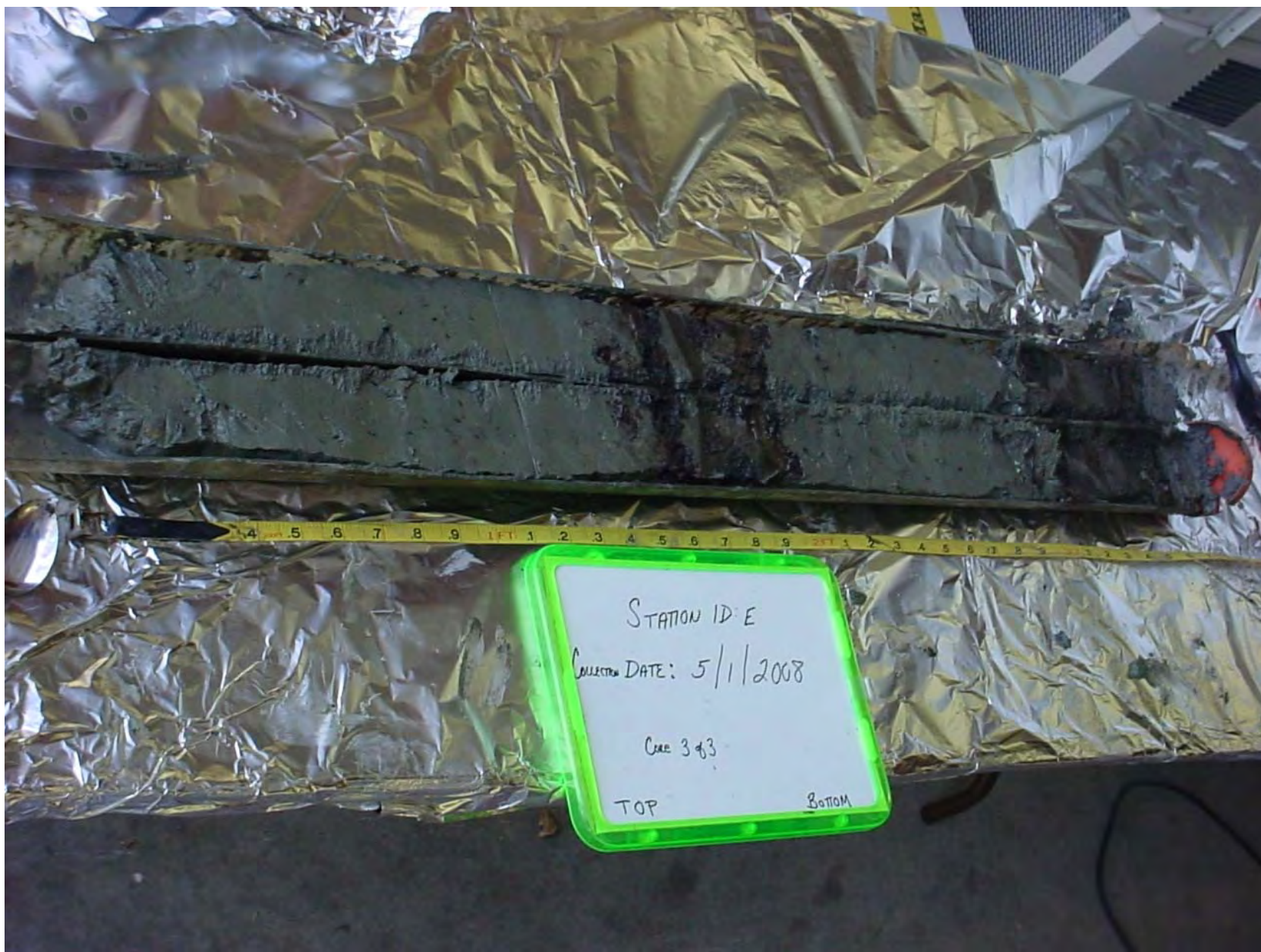
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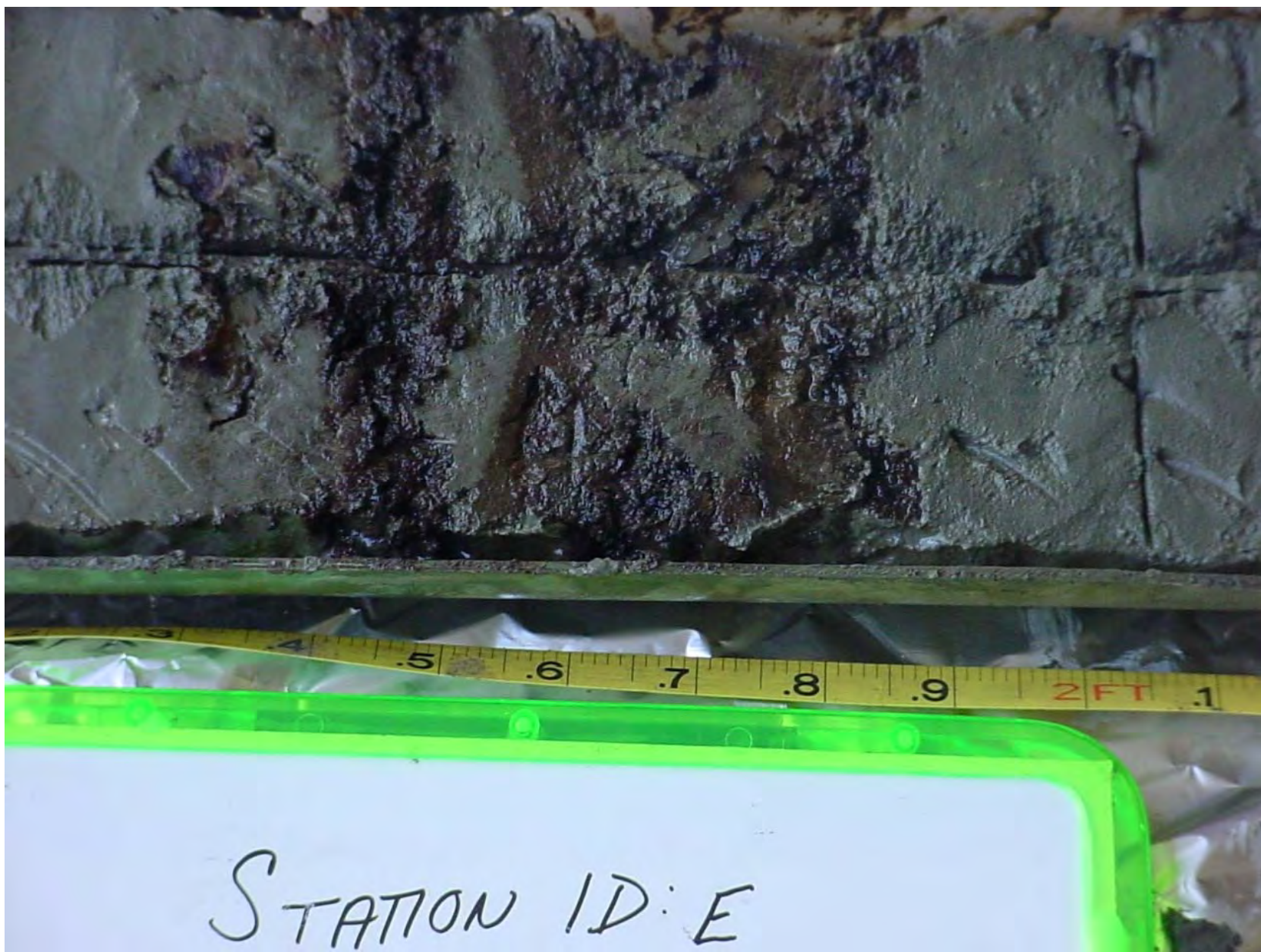
COLLECTION DATE: 04/30/2008

TOP

BOTTOM







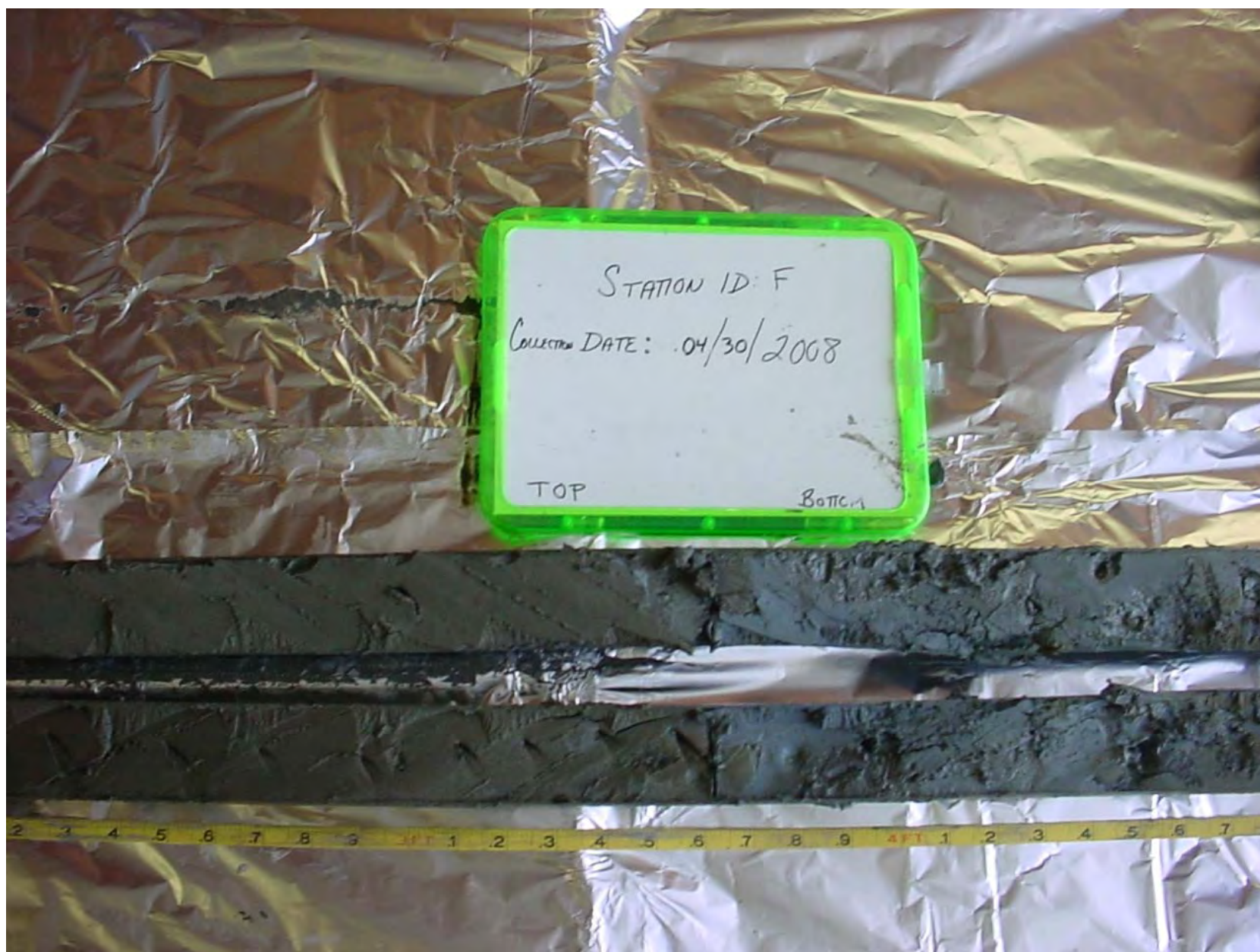
STATION ID: E

STATION ID: F
COLLECTION DATE: 04/30/2008

TOP

BOTTOM



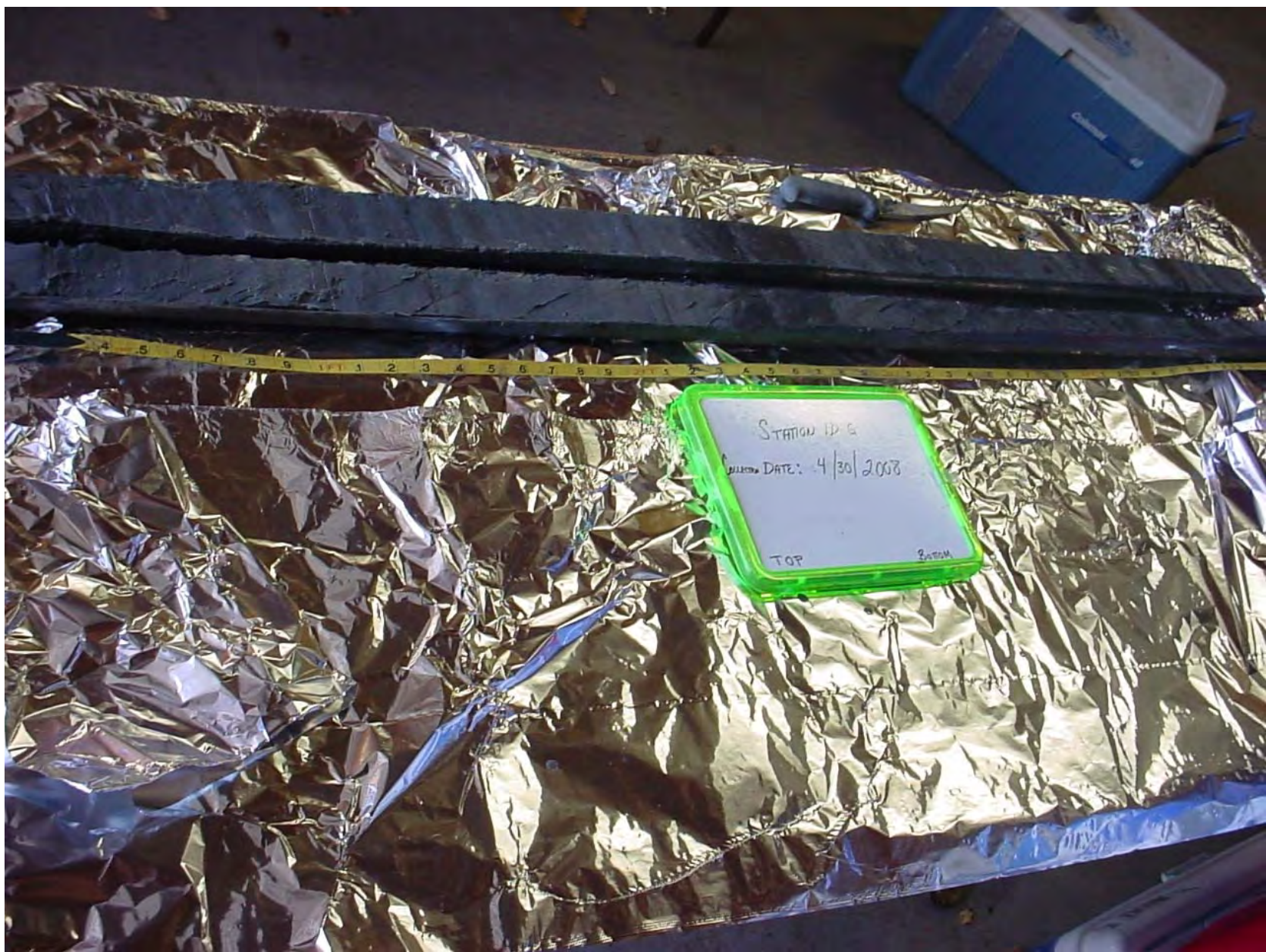


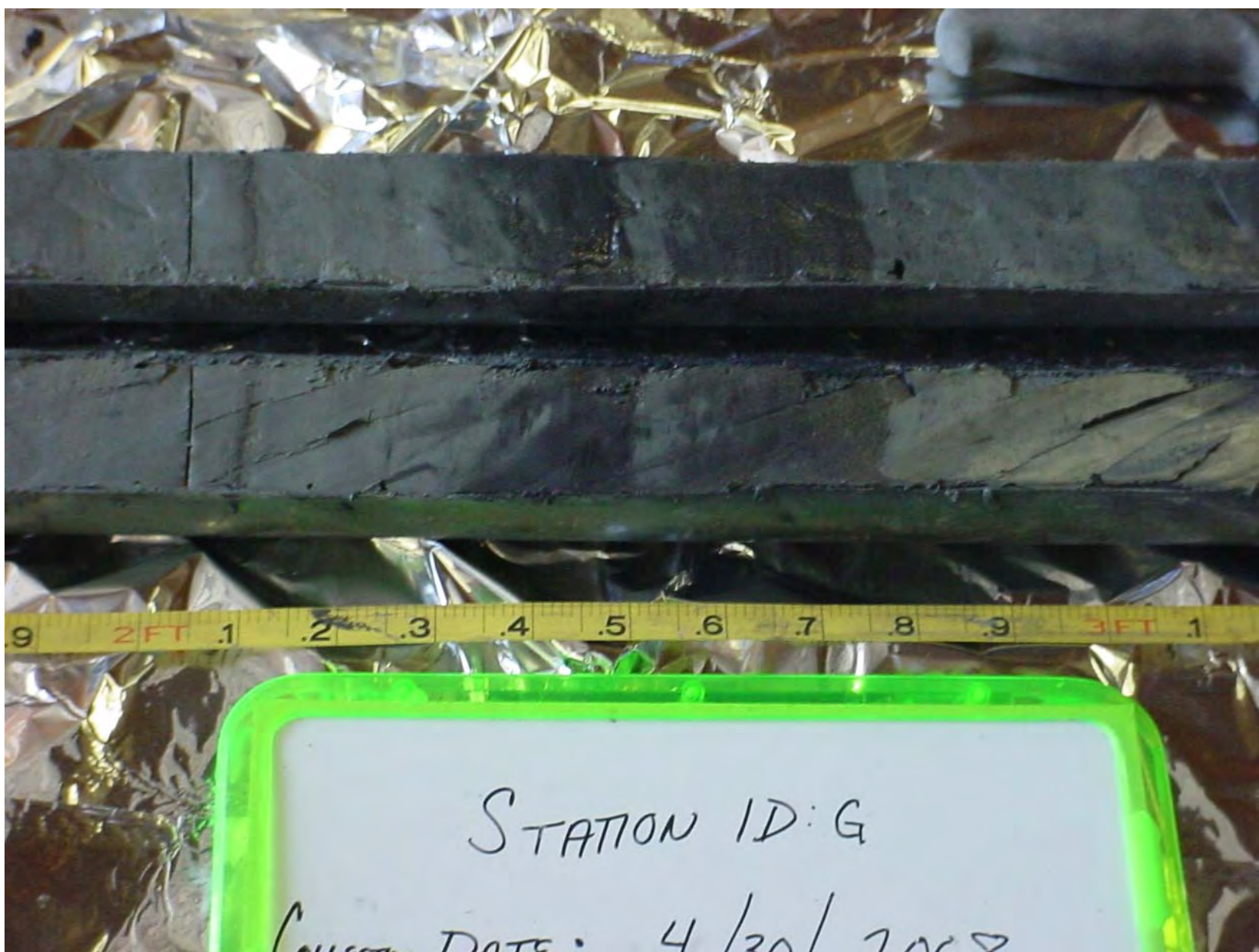
STATION ID: F
COLLECTION DATE: 04/30/2008

TOP

BOTTOM

8 9 5 FT 1 2 3 4 5 6 7 8 9 6 FT 1 2 3 4 5 6 7 8 9 7 FT 1 2 3

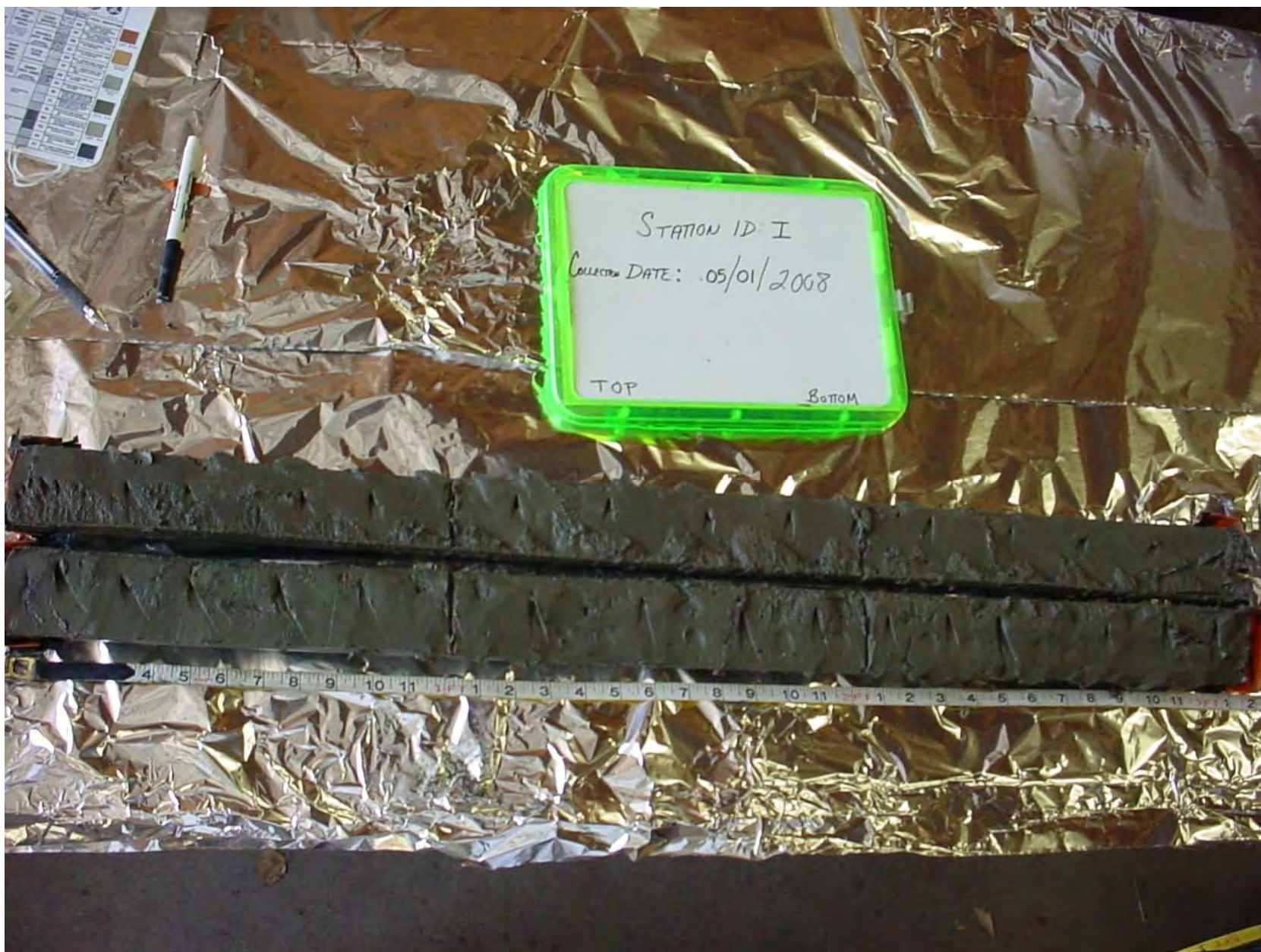




STATION ID: G

DATE: 4/30/2008





STATION ID: J
COLLECTION DATE: 05/01/2008

TOP

BOTTOM



APPENDIX F
SITE SAFETY FORMS

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Site Safety and Health Plan Receipt and Acceptance Form

Personnel Accident prevention Guidelines for Marine Operations Conducted in Support of the U.S. Army Corps of Engineers Field Sampling and Sediment Testing, Searsport Harbor, Searsport, ME.

I have received a copy of the Accident prevention Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name (Print): Michael P. McKee

Signature: Michael P. McKee

Date: 04/29/08

Representing (Print): Bathelle
Company Name



Searsport Harbor, ME

Site Safety and Health Plan Receipt and Acceptance Form

Personnel Accident prevention Guidelines for Marine Operations Conducted in Support of the U.S. Army Corps of Engineers Field Sampling and Sediment Testing, Searsport Harbor, Searsport, ME.

I have received a copy of the Accident prevention Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name (Print):

JOHN F SCANLON

Signature:

Date:

4/30/08

Representing (Print):

TG+B

Company Name



Searsport Harbor, ME

Site Safety and Health Plan Receipt and Acceptance Form

Personnel Accident prevention Guidelines for Marine Operations Conducted in Support of the U.S. Army Corps of Engineers Field Sampling and Sediment Testing, Searsport Harbor, Searsport, ME.

I have received a copy of the Accident prevention Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name (Print): LINWOOD PERRY

Signature: [Handwritten Signature] Date: 5-1-08

Representing (Print): TG-13
Company Name



Searsport Harbor, ME

Site Safety and Health Plan Receipt and Acceptance Form

Personnel Accident prevention Guidelines for Marine Operations Conducted in Support of the U.S. Army Corps of Engineers Field Sampling and Sediment Testing, Searsport Harbor, Searsport, ME.

I have received a copy of the Accident prevention Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name (Print): Mark Avakian

Signature: [Signature] Date: 5/1/08

Representing (Print): TG & B
Company Name

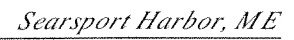
Site Safety and Health Plan Pre-Entry Briefing Attendance Form

Vibrocore Sampling

Briefing Conducted By: Mike McKee

Date Performed: 04/30/08

[illegible]



Briefing Conducted By: Mike McKee

Date Performed: 05/02/08

April-May 2008

APPENDIX G
CHAIN OF CUSTODY FORMS

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Proj. No G606441		Proj. Name Seasport Harbor														
SAMPLERS: Signature 				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION												
05/01/08	11:12		HAC-001	Station A vibracore sample (2')												1
04/30/08	15:25		HAC-002	Station B vibracore sample (6.7')												1
04/30/08	12:20		HAC-003	Station C vibracore sample (6.8')												1
04/30/08	10:55		HAC-004	Station D vibracore sample (7')												1
05/01/08	13:45		HAC-005	Station E vibracore sample (2.9', 2.6', 3.5')												3
04/30/08	11:30		HAC-006	Station F vibracore sample (7.4')												1
04/30/08	09:50		HAC-007	Station G vibracore sample (5.3')												1
05/01/08	16:18 - 15:00/15:18		HAC-008	Station H vibracore (2.9') & push core (3.1')												2
05/01/08	10:15/16:05		HAC-009	Station I vibracore (2') & push core (3.1')												2
05/01/08	08:58/17:20		HAC-010	Station J vibracore (2') & push core (2.4')												2
Relinquished by: 				Date/Time 05/03/08 1200		Received by: In storage @ Battelle Duxbury 				Date/Time 05/03/08 1200						
Relinquished by:				Date/Time		Received by:				Date/Time						
Comments: ① MPM 05/12/08 - military time incorrectly logged on core sampling log																

Proj. No G606441	Proj. Name Searsport Harbor
---------------------	--------------------------------

SAMPLERS: Signature

Michael P. ...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

SAMPLERS: Signature				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
DATE	TIME	BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION												
05/02/08	08:28		HAC-012	Belfast Bay Disposal Site Sed Grab (3.56 gal) 1 of 3												1
	08:49		HAC-013	Belfast Bay Disposal Site Sed Grab 2 of 3												1
	09:05		HAC-014	Belfast Bay Disposal Site Sed Grab 3 of 3												1
	09:50		HAC-015	Isleboro Disposal Site Sed Grab 1 of 3												1
	10:05		HAC-016	Isleboro Disposal Site Sed Grab 2 of 3												1
	10:20		HAC-017	Isleboro Disposal Site Sed Grab 3 of 3												1

Relinquished by:	Date/Time		Received by:	Date/Time	
	05/03/08	1200	In storage @ Battelle Duxbury 	05/03/08	1200
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: 6606441
Proj. Name: Seaport Harbor

SAMPLERS: Signature

Michael P. [Signature]

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/1/08		HAC-008-0-1'		Buckets of Sediment (Held for compositing)											1
		HAC-008-1'-2'													1
		HAC-008-2'-3.2'													1
5/1/08		HAC-009-0-1'													1
		HAC-009-1'-2'													1
		HAC-009-2'-3.1'													1
5/1/08		HAC-005-0-1'													1
		HAC-005-1'-2'													1
		HAC-005-2'-Bottom													1
5/1/08		HAC-007-0-1'													1
4/30/08		HAC-007-1'-2'													1
4/30/08		HAC-007-2'-Bottom													1
5/1/08		HAC-010-0-1'													1
5/1/08		HAC-010-1'-2'													1
5/1/08		HAC-001 0-1'													1
5/1/08		HAC-001 1'-2'													1
4/30/08		HAC-003 0-1'													1

Relinquished by:

Michael P. [Signature]

Date/Time

05/06/08 1700

Received by:

In Storage @ Battelle Duxbury
Michael P. [Signature]

Date/Time

05/06/08 1700

Relinquished by:

Date/Time

Received by:

Date/Time

Comments:

① 5/6 4/30/08

ORIGINAL

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No 6-606441	Proj. Name Searsport Harbor
-----------------------------	---------------------------------------

SAMPLERS: Signature

Michael P. M.

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
4/30/08		HAC-003-1'-2'		Buckets of Sediment (16LD for compositional)											1
4/30/08		HAC-003-2'-6.9'													1
4/30/08		HAC-006-0-1.9'													1
4/30/08		HAC-006-1.9-3.6'													1
4/30/08		HAC-006-3.6'-7.3'													1
4/30/08		HAC-002-0-1'													1
4/30/08		HAC-002-1'-2'													1
4/30/08		HAC-002-2'-7.3'													1
4/30/08		HAC-004-0'-1'													1
4/30/08		HAC-004-1'-2'													1
4/30/08		HAC-004-2'-bottom													1

Relinquished by: <i>Michael P. M.</i>	Date/Time 05/06/08 17:00		Received by: <i>In storage @ Battelle Duxbury</i> <i>Michael P. M.</i>	Date/Time 05/06/08 17:00	
	Date/Time			Date/Time	
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No G606441	Proj. Name Seasport Harbor
---------------------	-------------------------------

SAMPLERS: Signature

JMT, MPM, AEM

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER GRAV. etc	ACIDIFIED	PRESERVED	Total Number of Containers
5/1/08	15:18	HAC-005-1-1		station H											
5/1/08	15:18	HAC-005-1-1		station H											
5/2/08	08:28	HAC-012		PPDS reference											
	08:49	HAC-013													
	09:05	HAC-014													
	09:50	HAC-015		IDS reference											
	10:05	HAC-016													
	10:20	HAC-017													
5/1/08	13:45	HAC-005 0-1'		station E											
5/1/08	13:45	HAC-005 1-2'		station E											
1/30/08	09:50	HAC-007 0-1'		station G											
1/30/08	09:50	HAC-007 1-2'		station G											
5/1/08	16:05	HAC-009 0-1'		station I											
5/1/08	16:05	HAC-009 1-2'		station I											
5/1/08	08:58	HAC-010 0-1'		station J											
5/1/08	08:58	HAC-010 1-2'		station J											
5/1/08	11:12	HAC-010 1-1'		station A											

Relinquished by:

Date/Time

05/06/08 16:10

Received by:

Date/Time

Relinquished by:

Date/Time

Received by:

Date/Time

Comments:

Ref:
Dep: 3196Date: 05/06/2008
Wgt: 52.0 LBS
DV: 0.00SHIPPING: 48.74
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 48.74① MPM 05/12/08 - military time incorrectly logged on core
sampling logSvcs: PRIORITY OVERNIGHT
TRCK: 9572 3375 8598

COPY

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

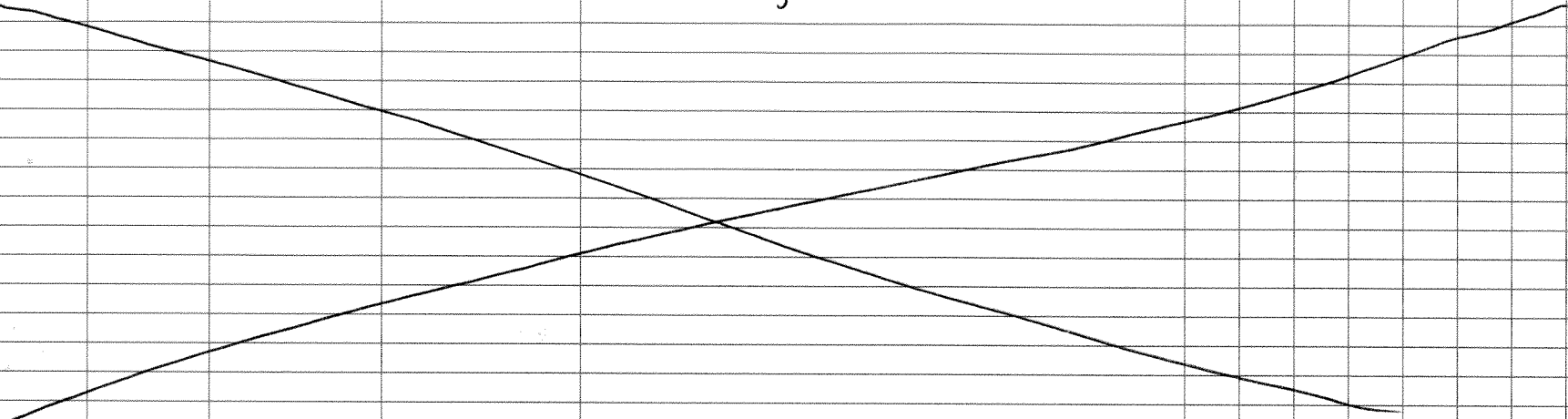
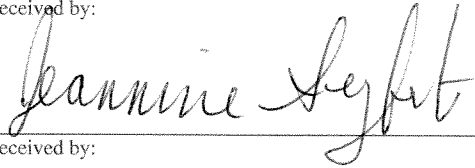
Date		Time	Battelle ID	Client ID	Sample Description	PEST	PCB	TPH Fingerprint	PAH	VOA	TBT	Metals	Other Grain Size	Acidified	Preserved	Total Number of Containers	
5/1/08	11:12		HAC-001-1'-2'		station A												
5/30/08	12:26		HAC-003-0'-1'		station C												
5/30/08	12:26		HAC-003-1'-2'		station C												
5/30/08	11:30		HAC-006-0'-1.9'		station F												
5/30/08	11:30		HAC-006-1.9'-3.6'		station F												
5/30/08	11:30		HAC-006-3.6'-7.3'		station F												
5/30/08	15:25		HAC-002-0'-1'		station B												
5/30/08	15:25		HAC-002-1'-2'		station B												
5/30/08	10:55		HAC-004-0'-1'		station D												
5/30/08	10:55		HAC-004-1'-2'		station D												
Relinquished by: 						Date/Time 05/06/08 16:10		Received by:					Date/Time				
Relinquished by:						Date/Time		Received by:					Date/Time				
Comments:																	



Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No G606441		Proj. Name Searsport Harbor														
SAMPLERS: Signature <i>Michael P. [Signature]</i>				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
DATE	TIME	BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION												
05/01/08	18:30		HAC-D11	vibracore catcher rinsate blank												1
05/02/08	11:00		HAC-D18	sediment grab rinsate blank												1
Relinquished by:				Date/Time		Received by:				Date/Time						
<i>Michael P. [Signature]</i>				05/06/08 11:30		<i>Matthew R. [Signature]</i>				5/6/08 1130						
Relinquished by:				Date/Time		Received by:				Date/Time						
<i>Matthew R. [Signature]</i>				5/6/08 1230												
Comments:				Ref: Dep: 3196		Date: 05/06/2008 Wgt: 5.0 LBS DV: 0.00				SHIPPING: 5.29 SPECIAL: 1.39 HANDLING: 0.00 TOTAL: 6.68						
Svcs: PRIORITY OVERNIGHT TRCK: 9572 3375 8532																

Proj. No G606441		Proj. Name Searsport Harbor													
SAMPLERS: Signature 				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"											
DATE	TIME	BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
05/01/08	18:30	Q2811	HAC-011	vibracone catcher rinseate blank	✓	✓		✓							1
05/02/08	11:00	Q2812	HAC-018	Sediment grab rinseate blank	✓	✓		✓							1
															
Relinquished by: 				Date/Time 05/06/08 11:30		Received by: 				Date/Time 5/16/08 11:35					
Relinquished by:				Date/Time		Received by:				Date/Time					
Comments:															

ATTACHMENT B

COMPOSITE PREPARATION LOGS AND CUSTODY RECORDS

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Sediment Compositing Log

Project: USACE NAE, Searsport Harbor, ME

Project #: G606441

Survey ID: HAC

Initials JMF/AEM Date 5/14/08 Composite ID HAC-019
 Site Location Searsport, ME Other _____

Sample ID	Station	Volume Used	Date/Init
HAC-003-1-2' C	C	500 ml	5/14/08 JMF
HAC-001-1-2' A	A	500 ml	
HAC-001-0-1' A	A	500 ml	
HAC-002-0-1' B	B	500 ml	
HAC-002-1-2' B	B	500 ml	
HAC-003-0-1' C	C	500 ml	

Sample was mixed ☒ by hand in a bowl, bucket or glass dish + with hand mixer
☐ in an epoxy-coated mixer

Sediment Split Designation

Aliquot Code	Parameter	Container Type for Sediment	Volume to Fill	Container Type for Water	ID	Ship To
A	Grain Size	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA	NA	AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA	HAC-019	AMS
C	Organics – PAH/PCB/PEST	250 ml (8oz) I-chem wide-mouth jar	¾ full	1-L pre-cleaned amber glass		Duxbury
D	Metals	2oz pre-cleaned and tared Spex jar	¾ full	500 mL pre-cleaned Teflon		Sequim
E	Archive (Frozen)	500 ml (16oz) I-chem wide-mouth *	¾ full	NA		Duxbury
F	Archive (Unfrozen)	500 ml (16oz) I-chem wide-mouth **	¾ full	NA		Duxbury
G	Atterberg Limits	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA	NA	AMS

* Store at -20° C

** Store at 4° C, do not freeze.

Reviewed By: Michael P. M. Date: 05/14/08

Sediment Compositing Log

Project: USACE NAE, Searsport Harbor, ME

Project #: G606441

Survey ID: HAC

Initials JMF/AEM Date 5/14/08 Composite ID HAC-020
 Site Location Searsport Harbor Other _____

Sample ID	Station	Volume Used	Date/Init
HAC-004-0-1'	D	500 ml	JMF 5/14/08
HAC-004-1-2'	D	↓	↓
HAC-006-0-19'	F		
HAC-006-19-36'	F	↓	↓

Sample was mixed ☒ by hand in a bowl, bucket or glass dish + w/ hand mixer
☐ in an epoxy-coated mixer

Sediment Split Designation

Aliquot Code	Parameter	Container Type for Sediment	Volume to Fill	Container Type for Water	ID	Ship To
A	Grain Size	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA	HAC-020 ↓	AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA		AMS
C	Organics – PAH/PCB/PEST	250 ml (8oz) I-chem wide-mouth jar	¾ full	1-L pre-cleaned amber glass		Duxbury
D	Metals	2oz pre-cleaned and tared Spex jar	¾ full	500 mL pre-cleaned Teflon		Sequim
E	Archive (Frozen)	500 ml (16oz) I-chem wide-mouth *	¾ full	NA		Duxbury
F	Archive (Unfrozen)	500 ml (16oz) I-chem wide-mouth **	¾ full	NA		Duxbury
G	Atterberg Limits	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA		AMS

* Store at -20° C

** Store at 4° C, do not freeze.

Reviewed By: Michael P. M. Date: 05/14/08

Sediment Compositing Log

Project: USACE NAE, Searsport Harbor, ME

Project #: G606441

Survey ID: HAC

Initials JMF/AEM Date 5/14/08 Composite ID HAC-021
 Site Location Searsport Harbor, ME Other _____

Sample ID	Station	Volume Used	Date/Init
HAC-005 ^{0-1'} _{1-2'}	① & E	250 ml 250 ml	5/14/08 JMF
HAC-007 ^{0-1'} _{1-2'}	G	250 ml 250 ml	↓
HAC-008 ^{0-1'} _{1-2'}	H	250 ml 250 ml	
HAC-009 ^{0-1'} _{1-2'}	I	250 ml 250 ml	

Sample was mixed _____ by hand in a bowl, bucket or glass dish
 _____ ✓ in an epoxy-coated mixer bucket w/ hand mixer

① S/B E
JMF 5/14/08

Sediment Split Designation

Aliquot Code	Parameter	Container Type for Sediment	Volume to Fill	Container Type for Water	ID	Ship To
A	Grain Size	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA	HAC-021 ↓	AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA		AMS
C	Organics – PAH/PCB/PEST	250 ml (8oz) I-chem wide-mouth jar	¾ full	1-L pre-cleaned amber glass		Duxbury
D	Metals	2oz pre-cleaned and tared Spex jar	¾ full	500 mL pre-cleaned Teflon		Sequim
E	Archive (Frozen)	500 ml (16oz) I-chem wide-mouth *	¾ full	NA		Duxbury
F	Archive (Unfrozen)	500 ml (16oz) I-chem wide-mouth **	¾ full	NA		Duxbury
G	Atterberg Limits	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA		AMS

* Store at -20° C

** Store at 4° C, do not freeze.

Reviewed By: Matt P Date: 05/14/08

Sediment Compositing Log

Project: USACE NAE, Searsport Harbor, ME

Project #: G606441

Survey ID: HAC

Initials JMF/AEM Date 5/14/08 Composite ID HAC-022
 Site Location Searsport Harbor Other _____

Sample ID	Station	Volume Used	Date/Init
HAC-0100-1'	J	750 ml	5/14/08 JMF
HAC-010 1'-2'	J	750 ml	↓

Sample was mixed _____ by hand in a bowl, bucket or glass dish
 ☒ in an epoxy-coated mixer in bucket w/ hand mixer

Sediment Split Designation

Aliquot Code	Parameter	Container Type for Sediment	Volume to Fill	Container Type for Water	ID	Ship To
A	Grain Size	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA		AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA		AMS
C	Organics – PAH/PCB/PEST	250 ml (8oz) I-chem wide-mouth jar	¾ full	1-L pre-cleaned amber glass		Duxbury
D	Metals	2oz pre-cleaned and tared Spex jar	¾ full	500 mL pre-cleaned Teflon		Sequim
E	Archive (Frozen)	500 ml (16oz) I-chem wide-mouth *	¾ full	NA		Duxbury
F	Archive (Unfrozen)	500 ml (16oz) I-chem wide-mouth **	¾ full	NA		Duxbury
G	Atterberg Limits	250 ml (8oz) I-chem wide-mouth jar	¾ full	NA		AMS

* Store at -20° C

** Store at 4° C, do not freeze.

Reviewed By: Mark P. N. Date: 05/14/08

Custody Records

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Sample Receipt Form

Approved: ☐ Authorized: ☐

Project Number: G606441

Client: _____

Received by: Seyfert, Jeannine

Date/Time Received: Thursday, May 15, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered

Tracking Number: NA

COC Forms: ☒ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container	NA	None	Not Applicable	Not Applicable	0.0	10

Samples

Sample Labels: ☒ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals: ☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☒ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples: ☒ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 0 Temperature Blank used ☐ Yes ☒ No

(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☒ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☒ NA

If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☒ NA

If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1 % in samples for water VOC analysis: ☐ Yes ☐ No ☒ NA

Individual sample deviations noted on sample log

Samples Containers:

Samples returned in PC-grade jars: ☒ Yes ☐ No ☐ Unknown /Lot No.: UnKnown

Storage Location: Chem North: Freezer - F0002 (Walk-in)

BDO IDs Assigned: Q2888 - Q2897

Samples logged in by: Seyfert, Jeannine

Date/Time: 05/15/2008 12:00 AM

Approved By: _____

Approved On: _____

Authorized By: _____

Authorized On: _____



The Business of Innovation

Sample Receipt Form Details

ShpNo SHP-080520-01

Battelle Project No:

Approved: ☐ Authorized ☐

Project Number: G606441

Client:

Received by: Seyfert, Jeannine

Date/Time Received: Thursday, May 15, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q2888	HAC-012	05/02/08 8:28	05/20/08 9:01	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2889	HAC-013	05/02/08 8:49	05/20/08 9:04	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2890	HAC-014	05/02/08 9:05	05/20/08 9:04	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2891	HAC-015	05/02/08 9:50	05/20/08 9:05	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2892	HAC-016	05/02/08 10:05	05/20/08 9:05	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2893	HAC-017	05/02/08 10:20	05/20/08 9:05	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2894	HAC-019	04/30/08 12:26	05/20/08 9:05	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2895	HAC-020	04/30/08 10:55	05/20/08 9:06	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2896	HAC-021	04/30/08 9:50	05/20/08 9:08	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	
Q2897	HAC-022	05/01/08 8:58	05/20/08 9:08	1	SEDIMENT	0	NA	NA	NA	F0002 (Walk-in)	BIN	2	

Total Samples: 10

Proj. No G606441	Proj. Name Sausport Harbor ME
---------------------	----------------------------------

SAMPLERS: Signature

$$JmF + AEm$$
[illegible]

Relinquished by:

Relinquished by:	<i>Jessica M. Jolley</i>	Received by:	<i>Jessamine Sept.</i>	Date/Time	<i>5/15/08 0900</i>
				Date/Time	

Relinquished by:

Relinquished by:			Received by:	Date/Time

Comments:

[illegible]

Proj. No
G606441

Proj. Name

Searsport Harbor

SAMPLERS: Signature

Michael P. M.

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

SAMPLE DESCRIPTION

FIELD
CLIENT ID

BATTELLE ID

TIME

DATE

vibracore catcher rinsate blank
sediment grab rinsate blank

HAC-011
HAC-018

2891.1
2891.2

05/01/08 18:30
05/02/08 11:00

TPH
FINGERPRINT

PAH

VOA

TBT

METALS

OTHER

ACIDIFIED

PRESERVED

Total Number
of Containers

1
1

✓
✓

✓
✓

✓
✓

✓
✓

✓
✓

✓
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✓
✓

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Relinquished by:

Michael P. M.

Received by:

Michael P. M.

Date/Time

05/06/08 11:30

Date/Time

5/6/08 1130

Relinquished by:

Michael P. M.

Received by:

Michael P. M.

Date/Time

5/6/08 1230

Date/Time

05/06/08 1244

Comments:

SAMPLE LOGIN
(SOP# MSL-A-001)

cc: Project Manager/Central File
Login File

2891

Project Manager: Brandenberger
Date Received: 05/07/08
Batch: 1

PROJECT: Searsport Harbor ✓

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
HAC-011 ✓	Vibracore Catcher rinsate blank ✓	2891-1 ✓	water	Prep Lab L-3-C	metals	05/01/08 ✓	MLFM
HAC-018 ✓	Sediment Grab rinsate blank ✓	2891-2	water	Prep Lab L-3-C	metals	05/02/08 ✓	MLFM

Vibracore
2891-1

LOG-IN CHECKLIST

Searsport Harbor

Reference SOP# MSL-A-001

Central File #: 2891Sample No(s): 1-2Project Manager: JMRS

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: DI waterWP# W 84819

Yes

No

☐☒

Navy-type Project (requires high-level sample tracking procedures)

☐☒

Filter Samples:

Amount:

Entire sample

Half of sample

☐☒

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

☐☒

Special instructions:

Sample Preservation Instructions:

preserved in the field

Date To Archive:

Date To Dispose:

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Was a custody seal present?

☐☒☐

Was the custody seal intact?

☒☐☐Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$ or frozen?

(if multiple coolers, note temp. of each)

5.0 °C

°C

☐☐☒

Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?

Comment/Remedy:

☒☐☐Were all chain of custody forms signed and dated?☐☒☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Spex

Other:

Notes:

Completed By: JMRS

Date/Time:

05/07/08 1244

SAMPLE PRESERVATION

☐

Sample(s) were preserved at MSL

☒

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☒

Random pH checked for ~10% of samples (use dip paper)

Sample IDs: 2891-2 OK☐

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐0.2% HNO₃

Notes:

☐

0.5% HCl (Hg samples)

Notes:

☐

Refrigerate/Freeze

Notes:

☐

Other

Notes:

Completed By: JMRS

Date/Time:

05/07/08 1255

Proj. No G606441	Proj. Name Seasport Harbor
SAMPLERS: Signature	

JMT, MPM, AEM

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER <i>GRAIN SIZE</i>	ACIDIFIED	PRESERVED	Total Number of Containers
5/1/08	16:18	HAC-008-1'-2'		Station H												1
5/1/08	16:18	HAC-008-0-1		Station H												1
5/2/08	08:28	HAC-012		BBDs Reference												1
	08:49	HAC-013		↓												1
	09:05	HAC-014														1
	09:50	HAC-015		IDS Reference												1
	10:05	HAC-016		↓												1
	10:20	HAC-017														1
5/1/08	13:45	HAC-005-0-1'		Station E												1
5/1/08	13:45	HAC-005-1'-2'		Station E												1
5/30/08	09:50	HAC-007-0-1'		Station G												1
5/30/08	09:50	HAC-007-1'-2'		Station G												1
5/1/08	16:05	HAC-009-0-1'		Station I												1
5/1/08	16:05	HAC-009-1'-2'		Station I												1
5/1/08	08:58	HAC-010-0-1'		Station S												1
5/1/08	08:58	HAC-010-1'-2'		Station S												1
5/7/08	11:12	HAC-010-1'		Station A												1

Relinquished by:

Michael P. McIn

Received by:

Stephanie C. Moore

Date/Time

05/06/08 16:10

Date/Time

5/7/08 9:45A

Relinquished by:

Received by:

Date/Time

Date/Time

Comments:

pl062

Proj. No G-606441		Proj. Name Seasport Harbor	
SAMPLERS: Signature JMF, MPH, MEM			
DATE	TIME	BATTELLE ID	CLIENT ID
5/1/08	11:12	HAC-001-1'-2'	Station A
1/30/08	12:26	HAC-003-0'-1'	Station C
1/30/08	12:26	HAC-003-1'-2'	Station C
1/30/08	11:30	HAC-006-0'-1.9'	Station F
1/30/08	11:30	HAC-006-1.9'-3.6'	Station F
4/30/08	11:30	HAC-006-3.6'-7.3'	Station F
4/30/08	15:25	HAC-002-0'-1'	Station B
4/30/08	15:25	HAC-002-1'-2'	Station B
4/30/08	10:55	HAC-004-0'-1'	Station D
4/30/08	10:55	HAC-004-1'-2'	Station D

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"	PEST	PCB	TPH	FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Gravimetric	ACIDIFIED	PRESERVED	Total Number of Containers
SAMPLE DESCRIPTION												
Station A												1
Station C												1
Station C												1
Station F												1
Station F												1
Station F												1
Station B												1
Station B												1
Station D												1
Station D												1

Relinquished by: Mildred M	Date/Time 05/06/08 16:10	Received by: Stephanie C Moore	Date/Time 5/7/08 9:45A
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
p2062

Proj. No G606441	Proj. Name Seasport Harbor, ME
---------------------	-----------------------------------

$$JMF + AFM$$
[illegible]

Relinquished by:

Received by:

Dear Mr. J.

Jennifer D. Davis

Relinquished by:

Received by:

Comments:

① Please ignore JNF 5/15/08

Proj. No
G606441
SAMPLERS: Signature
Proj. Name
Searsport Harbor, ME

JMF + AEM

DATE	TIME	BATTLE ID	CLIENT ID	SAMPLE DESCRIPTION	ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/2/08	08:28	HAC-012	2891.3	Reference Sediment BEDS	↓							✓				1
5/2/08	08:49	HAC-013	4									✓				1
	09:03	HAC-014	5									✓				1
	09:50	HAC-015	6	Reference Sediment IDS								✓				1
	10:05	HAC-016	7									✓				1
	10:20	HAC-017	8									✓				1
4/30/08	12:26	HAC-019	9	Sediment from Station A.R.C.								✓				1
	10:55	HAC-020	10	Sediment from Station D.F.								✓				1
	09:50	HAC-021	11	Sediment from Station E.G.H.								✓				1
5/1/08	08:58	HAC-022	2891.12	Sediment from Station J								✓				1

Relinquished by:	Date/Time	Received by:	Date/Time
<i>[Signature]</i>	5/14/08 1600	<i>[Signature]</i>	05/15/08 1400
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: ① 5/8 08:28 time 5/14/08

cc: Project Manager/Central File
Login File

2891

SAMPLE LOGIN
(SOP# MSL-A-001)

Project Manager: Brandenberger
Date Received: 05/15/08
Batch: 2

PROJECT: Searsport Harbor

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
HAC-012 ✓	Reference Sediment BBDS ✓	2891-3 ✓	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-013 ✓	Reference Sediment BBDS	2891-4	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-014	Reference Sediment BBDS	2891-5	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-015	Reference Sediment IDS ✓	2891-6 ✓	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-016 ✓	Reference Sediment IDS	2891-7	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-017 ✓	Reference Sediment IDS	2891-8	sediment	Deep Freezer B-1	metals	05/02/08	MLFM
HAC-019 ✓	Sediment from Station A,B,C ✓	2891-9	sediment	Deep Freezer B-1	metals	04/30/08	MLFM
HAC-020 ✓	Sediment from Station D,F ✓	2891-10	sediment	Deep Freezer B-1	metals	04/30/08	MLFM
HAC-021 ✓	Sediment from Station E,G,H,I ✓	2891-11	sediment	Deep Freezer B-1	metals	04/30/08	MLFM
HAC-022 ✓	Sediment from Station J ✓	2891-12 ✓	sediment	Deep Freezer B-1	metals	05/01/08	MLFM

✓
2891/5-8-08

Central File #: 2891 Sample No(s): 3-12Project Manager: Brandenberger

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: _____

WP# _____

Yes

No

☐☐

Navy-type Project (requires high-level sample tracking procedures)

☐☐

Filter Samples:

Amount: _____

Entire sample

Half of sample

☐☐

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

☐☐

Special instructions: _____

Sample Preservation Instructions: _____

Date To Archive: _____

Date To Dispose: _____

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Was a custody seal present?

☐☐☒

Was the custody seal intact?

☒☐☐Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$ or frozen?

(if multiple coolers, note temp. of each)

4.4 $^\circ\text{C}$ $^\circ\text{C}$ ☐☐☒

Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?

Comment/Remedy: _____

☒☐☐Were all chain of custody forms signed and dated?☐☒☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): _____

Container type:

Teflon

Poly

Glass

Spex

Other: _____

Notes: _____

Completed By: [Signature]Date/Time: 05/15/081400

SAMPLE PRESERVATION

☒

Sample(s) were preserved at MSL

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs: _____

☐

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐0.2% HNO₃

Notes: _____

☐

0.5% HCl (Hg samples)

Notes: _____

☒

Refrigerate/Freeze

Notes: Deep freezeB-1☐

Other

Notes: _____

Completed By: [Signature]Date/Time: 05/15/081400

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ATTACHMENT C

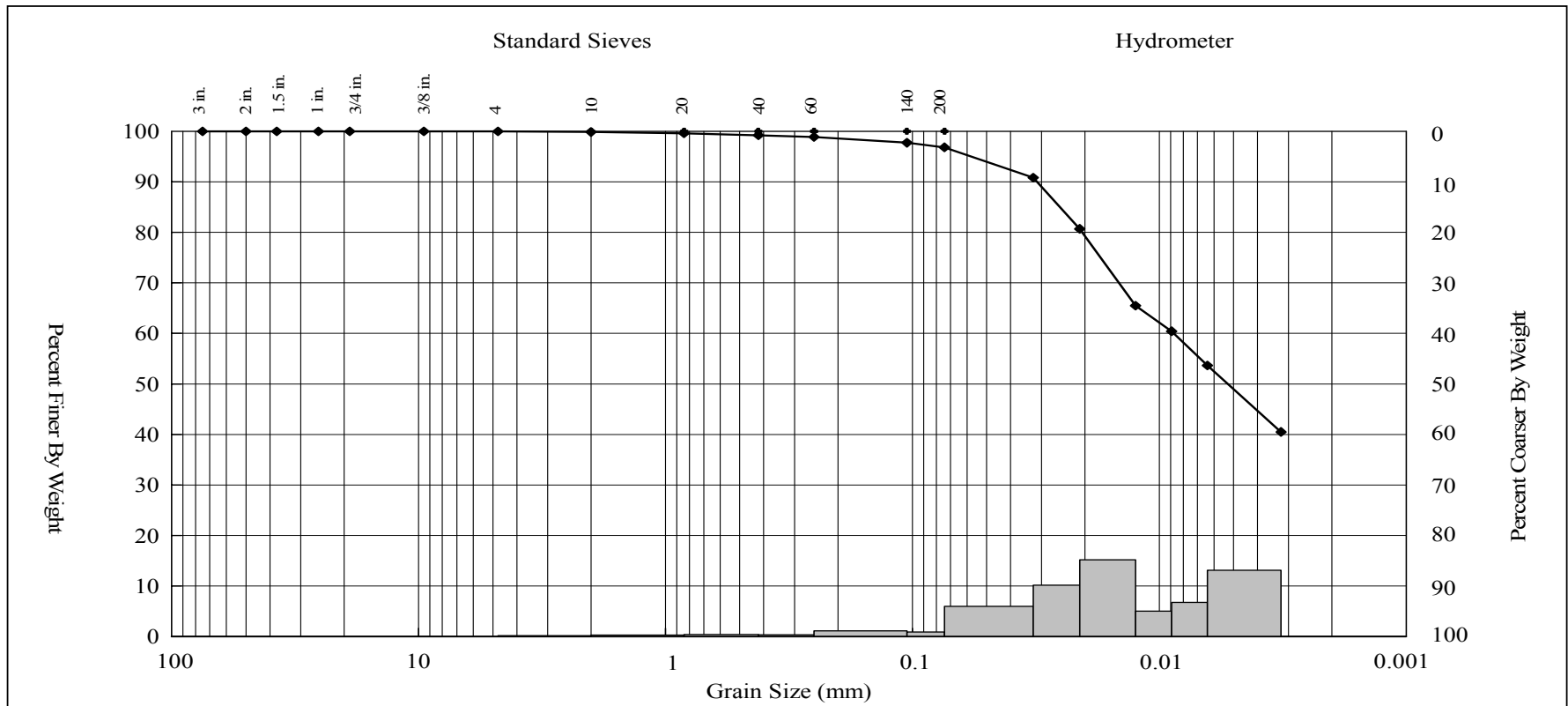
SEDIMENT CHEMISTRY DATA

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Geotechnical Data

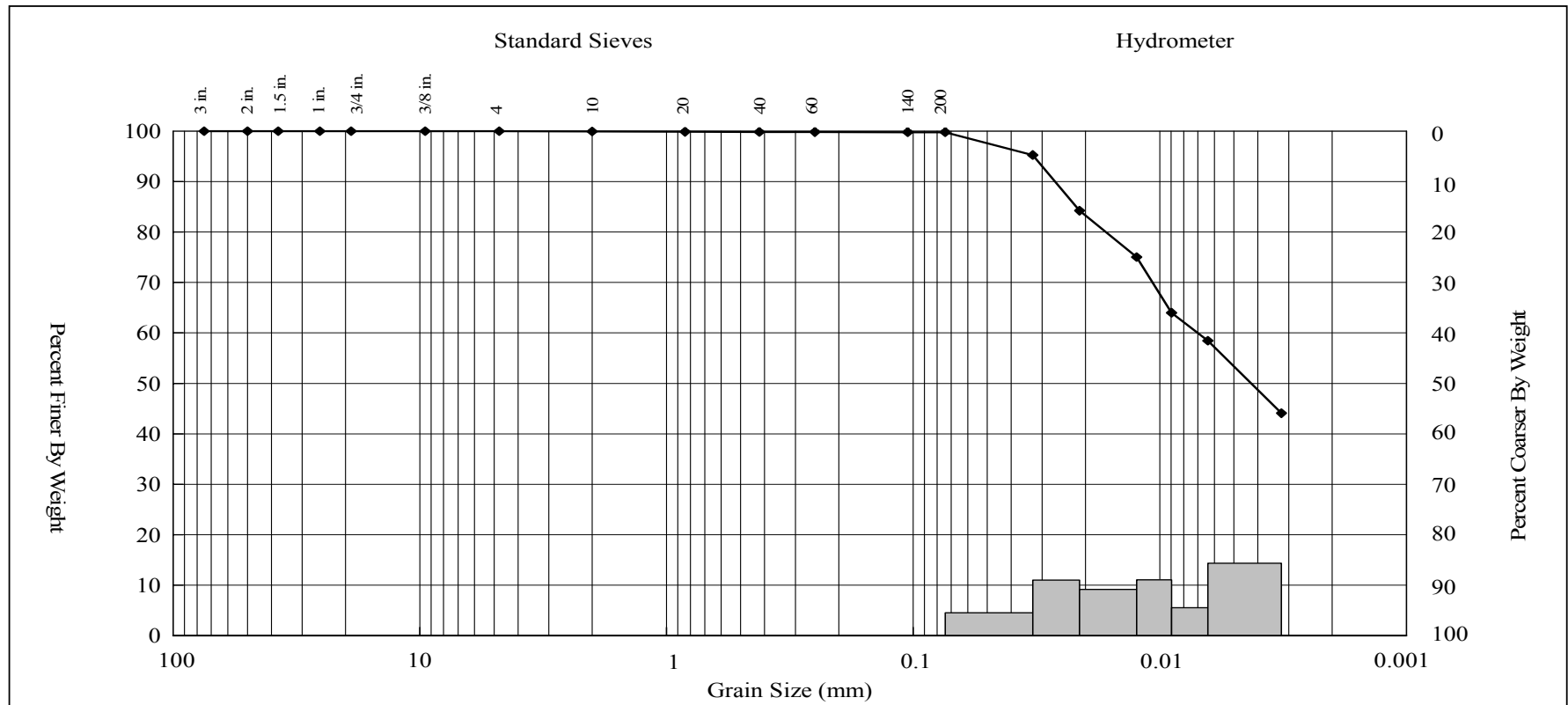
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GEOTECHNICAL RESULTS



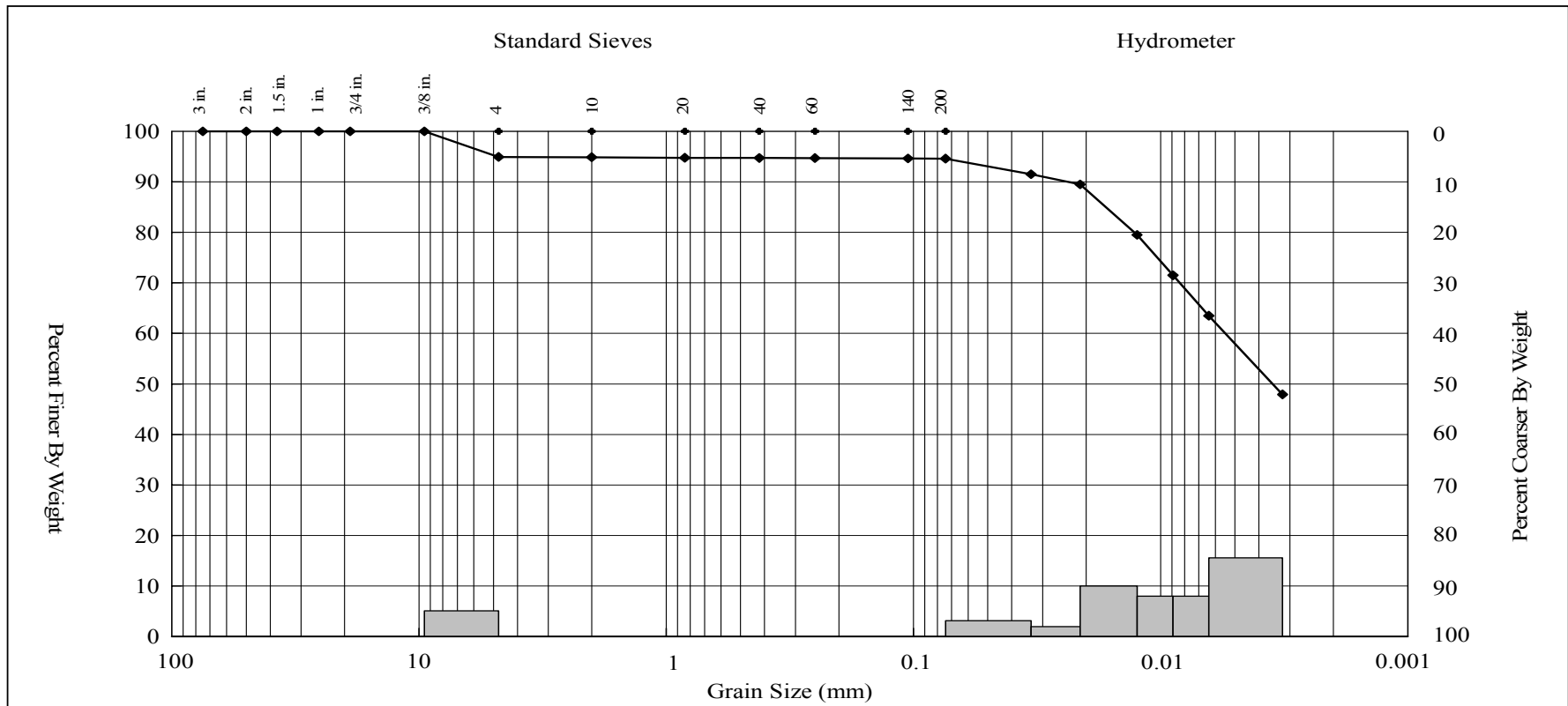
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.14		0.64	2.41		48.86		47.95			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		
113												
Material Description										Client Sample ID: HAC-008 1'-2' AMS Sample ID: 8C8-1		
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						 Laboratory No. E87956

GEOTECHNICAL RESULTS



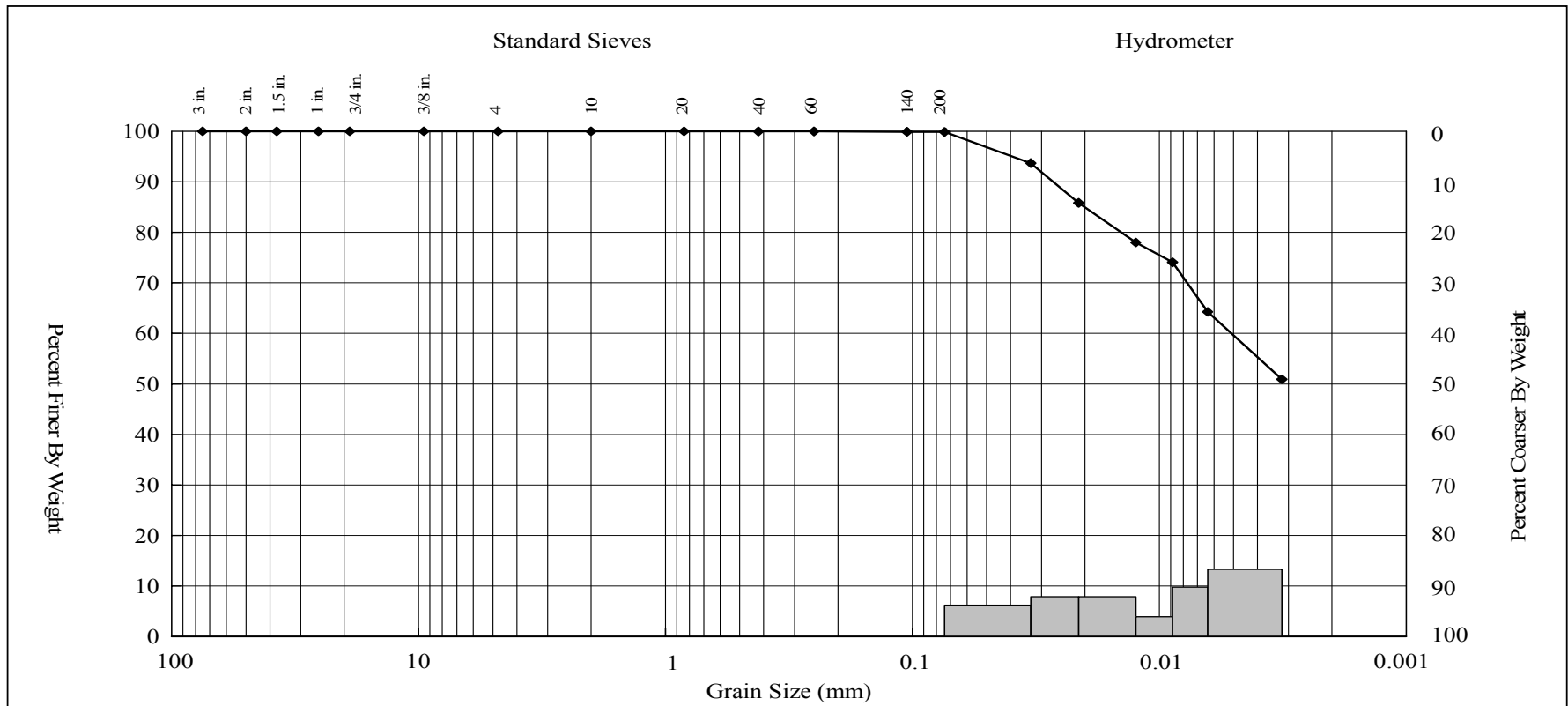
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-012 AMS Sample ID: 8C8-3			
		Coarse		Medium	Fine	Silt		Clay					
0.00		0.07		0.12		0.06		47.52				52.23	
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
164													
Material Description													
Lean Clay ("CL"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager ACCREDITED IN ACCORDANCE WITH  Laboratory No. E87956							

GEOTECHNICAL RESULTS



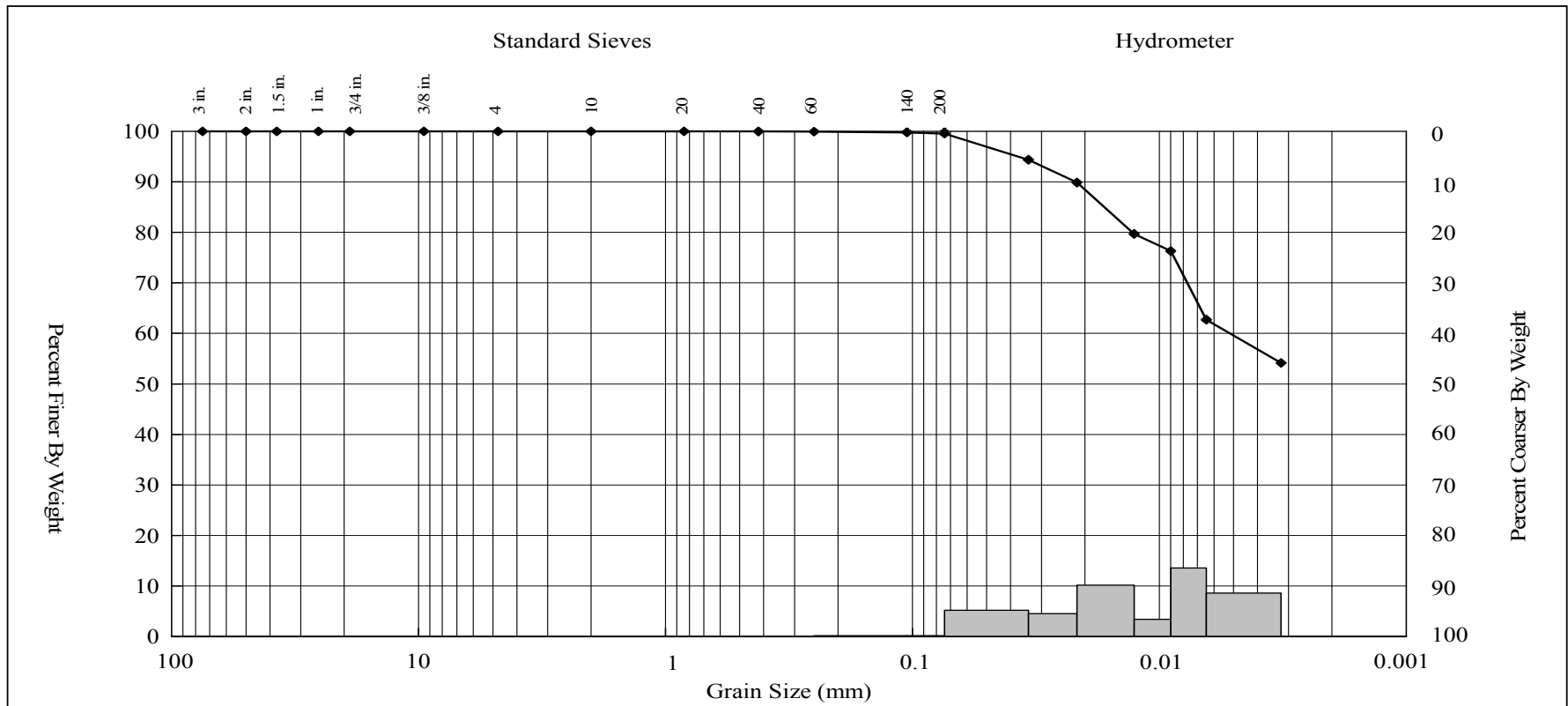
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
5.08		0.08		0.12	0.12	37.85		56.75		Client Sample ID: HAC-013 AMS Sample ID: 8C8-4		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
155												
Material Description												
Lean Clay ("CL"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						
						 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956						

GEOTECHNICAL RESULTS



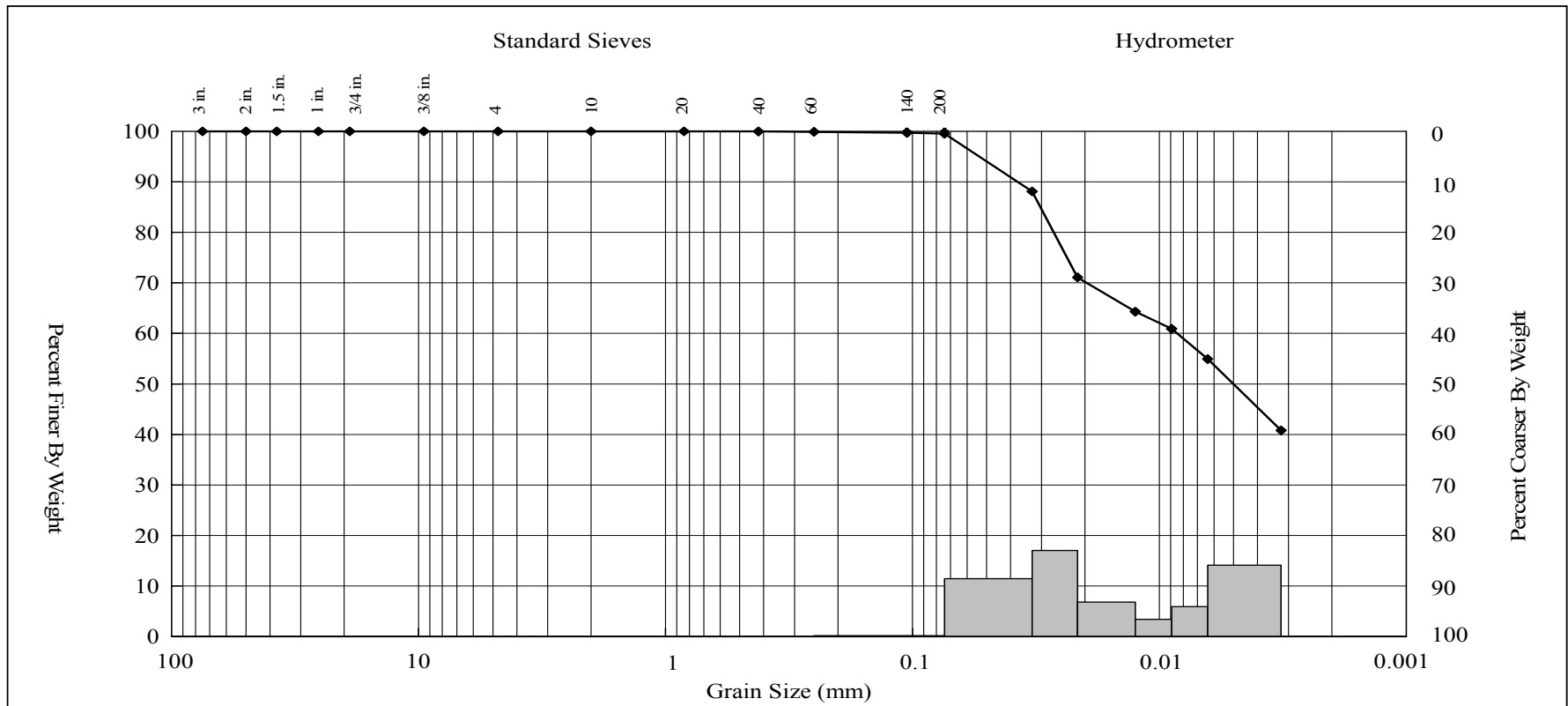
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-014 AMS Sample ID: 8C8-5				
		Coarse		Medium		Fine		Silt				Clay		
0.00		0.00		0.04		0.10		41.30				58.56		
Water Cont. (%)		LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀			C _c	C _u	
159														
Material Description														
Lean Clay ("CL"), dark greenish gray (10Y 4/1)														
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax					These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager									
														

GEOTECHNICAL RESULTS



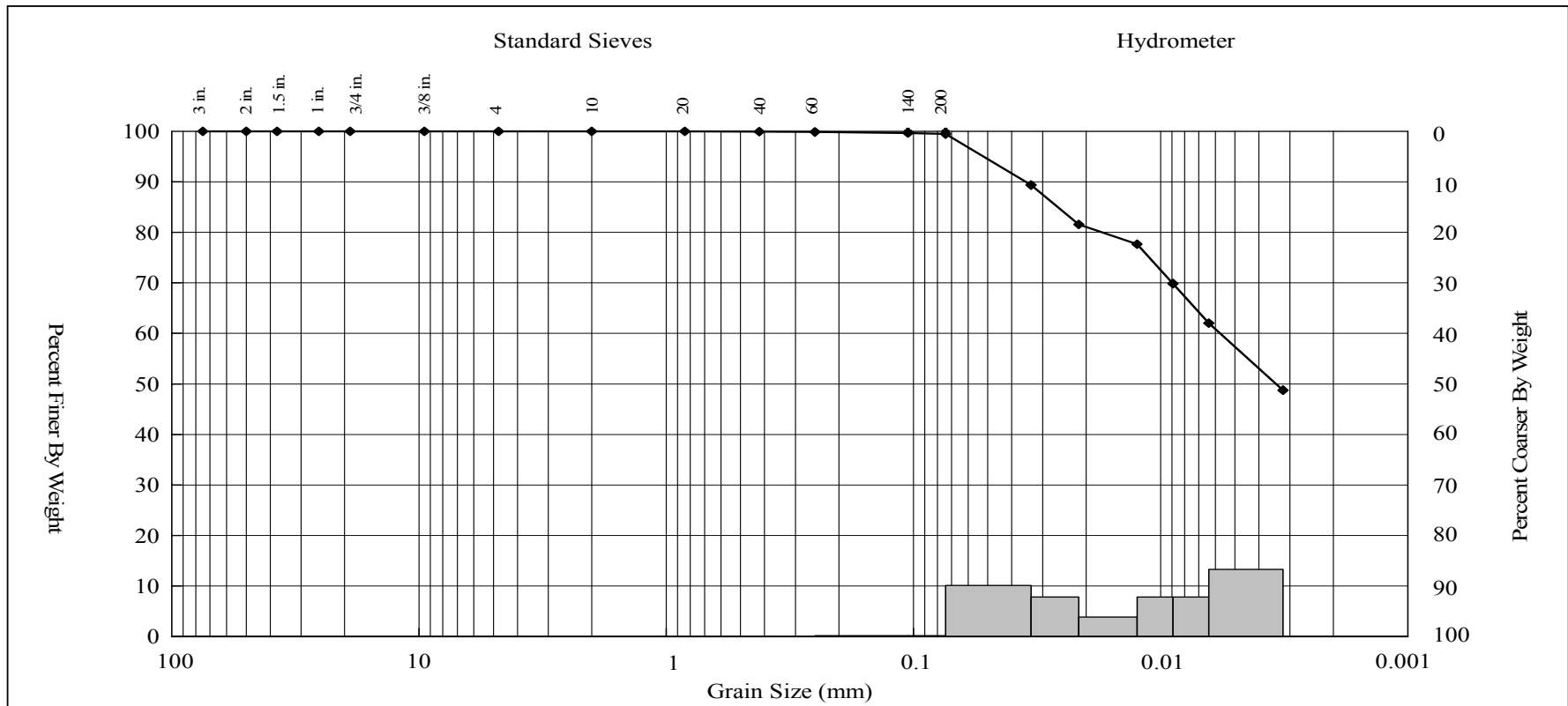
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-015 AMS Sample ID: 8C8-6	
		Coarse		Medium	Fine	Silt		Clay			
0.00		0.00		0.05	0.41		40.64		58.90		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c		
174											
Material Description											
Lean Clay ("CL"), dark greenish gray (10Y 4/1)											
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager					
											

GEOTECHNICAL RESULTS



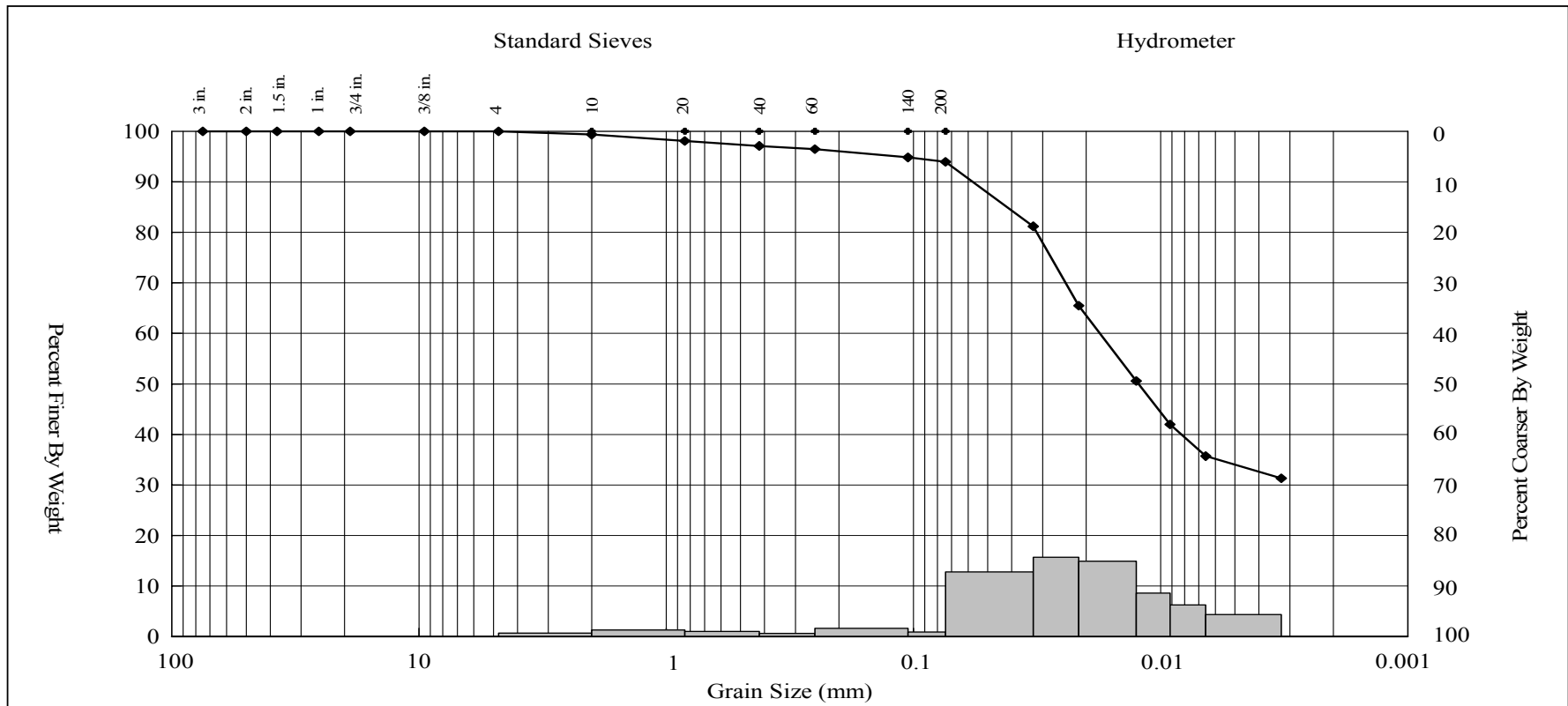
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422					
		Coarse		Medium	Fine	Silt		Clay							
0.00		0.00		0.05	0.42		50.72		48.81						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u			
165															
Material Description										Client Sample ID: HAC-016 AMS Sample ID: 8C8-7					
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)															
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager								

GEOTECHNICAL RESULTS



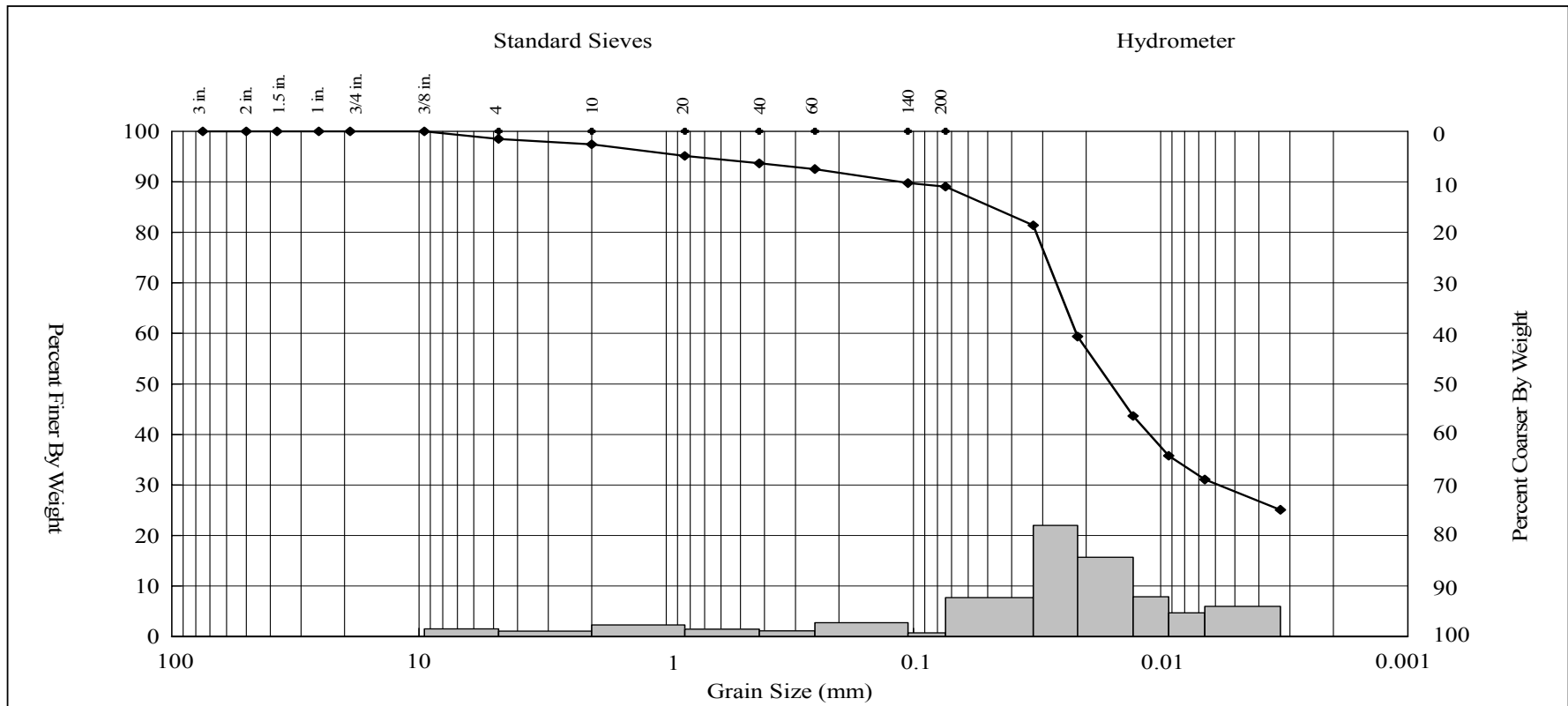
Gravel (%)		Sand (%)					Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/2/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-017 AMS Sample ID: 8C8-8	
		Coarse		Medium		Fine	Silt		Clay			
0.00		0.00		0.08		0.47		43.16		56.29		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		
166												
Material Description												
Lean Clay ("CL"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager					
							 ACCREDITED IN ACCORDANCE WITH Laboratory No. E87956					

GEOTECHNICAL RESULTS



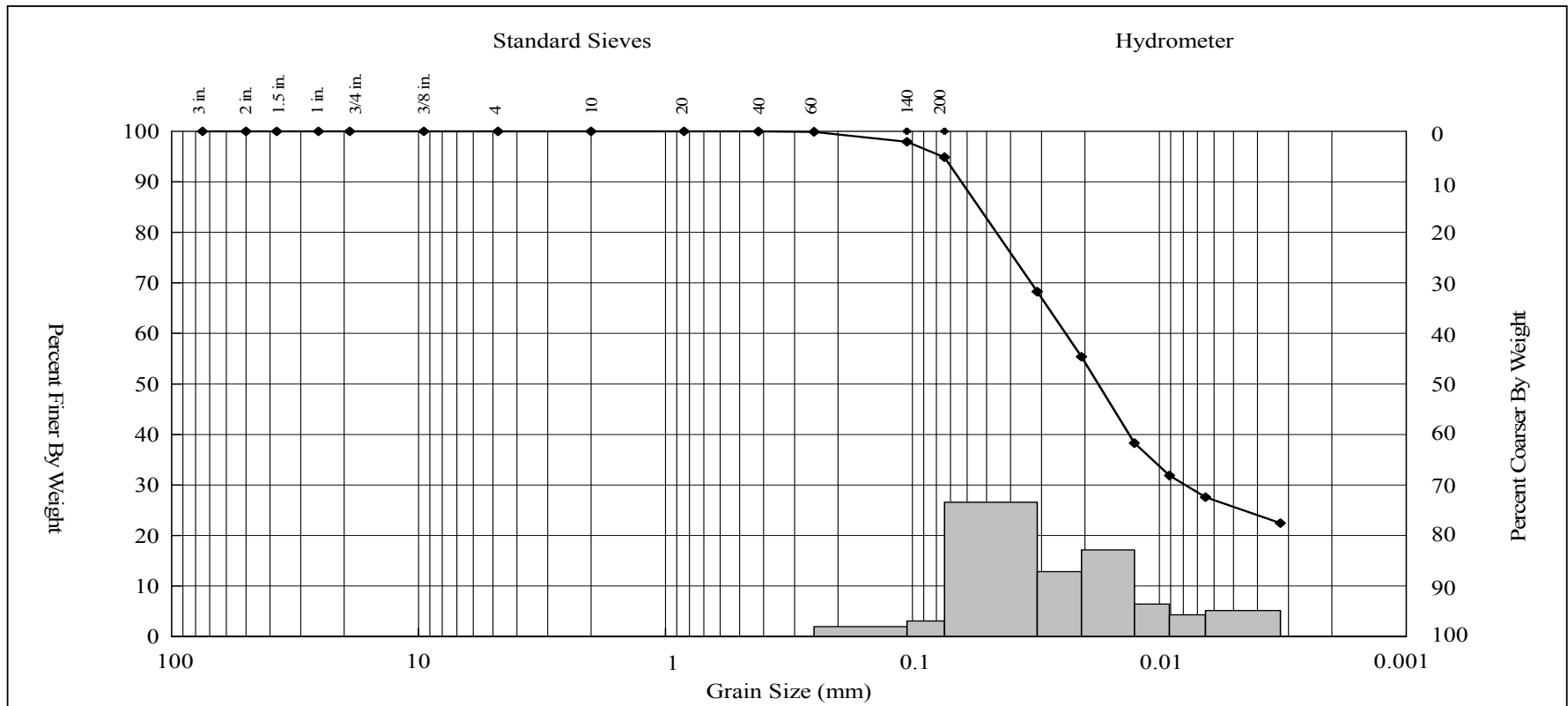
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.65		2.28	3.12	60.30		33.65		Client Sample ID: HAC-005 0'-1' AMS Sample ID: 8C8-9		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
69												
Material Description												
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax					These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie C. S. Moore AMS, Inc. Project Manager							

GEOTECHNICAL RESULTS



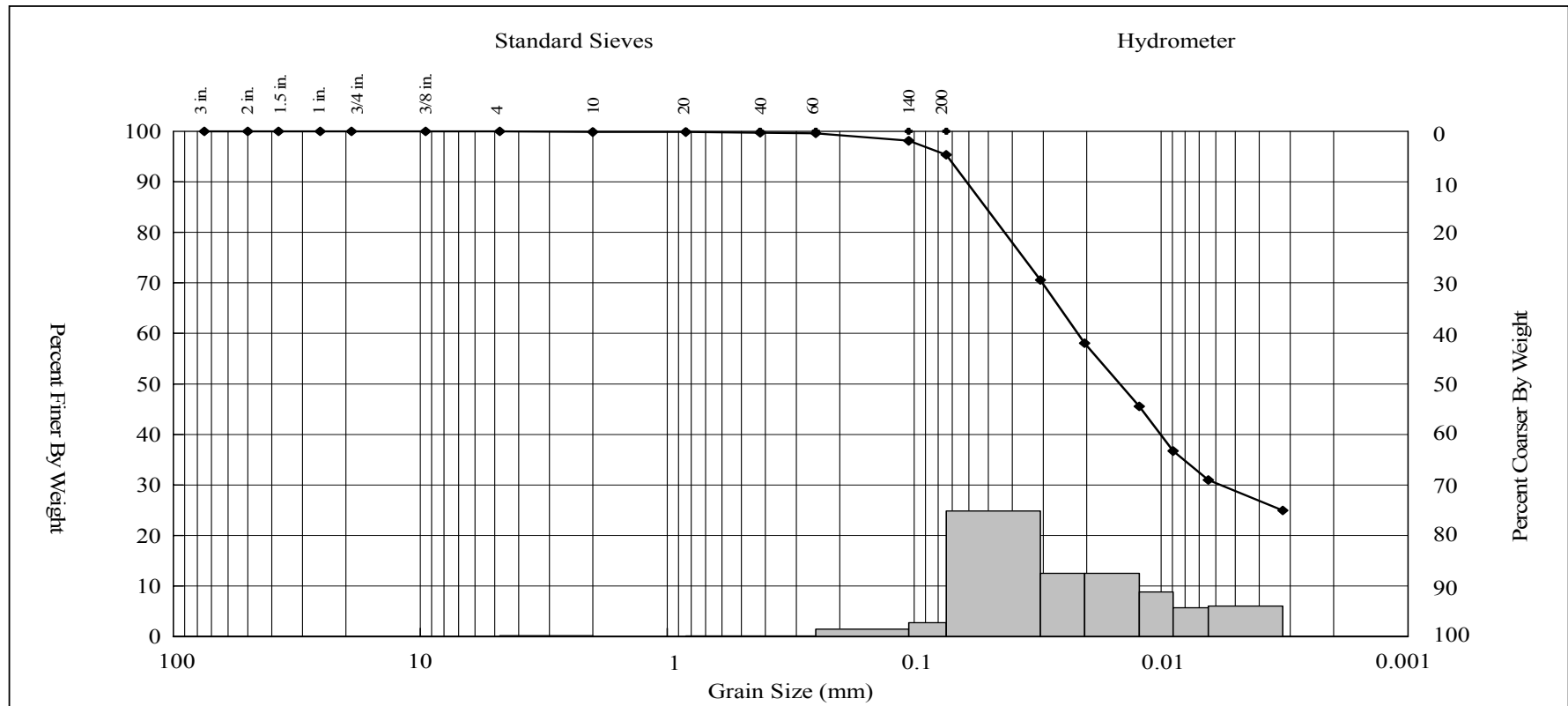
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
1.51		1.08		3.77	4.59	60.86		28.19		Client Sample ID: HAC-005 1'-2' AMS Sample ID: 8C8-10		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
94												
Material Description												
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax					These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager					 ACCREDITED IN ACCORDANCE WITH Laboratory No. E87956		

GEOTECHNICAL RESULTS



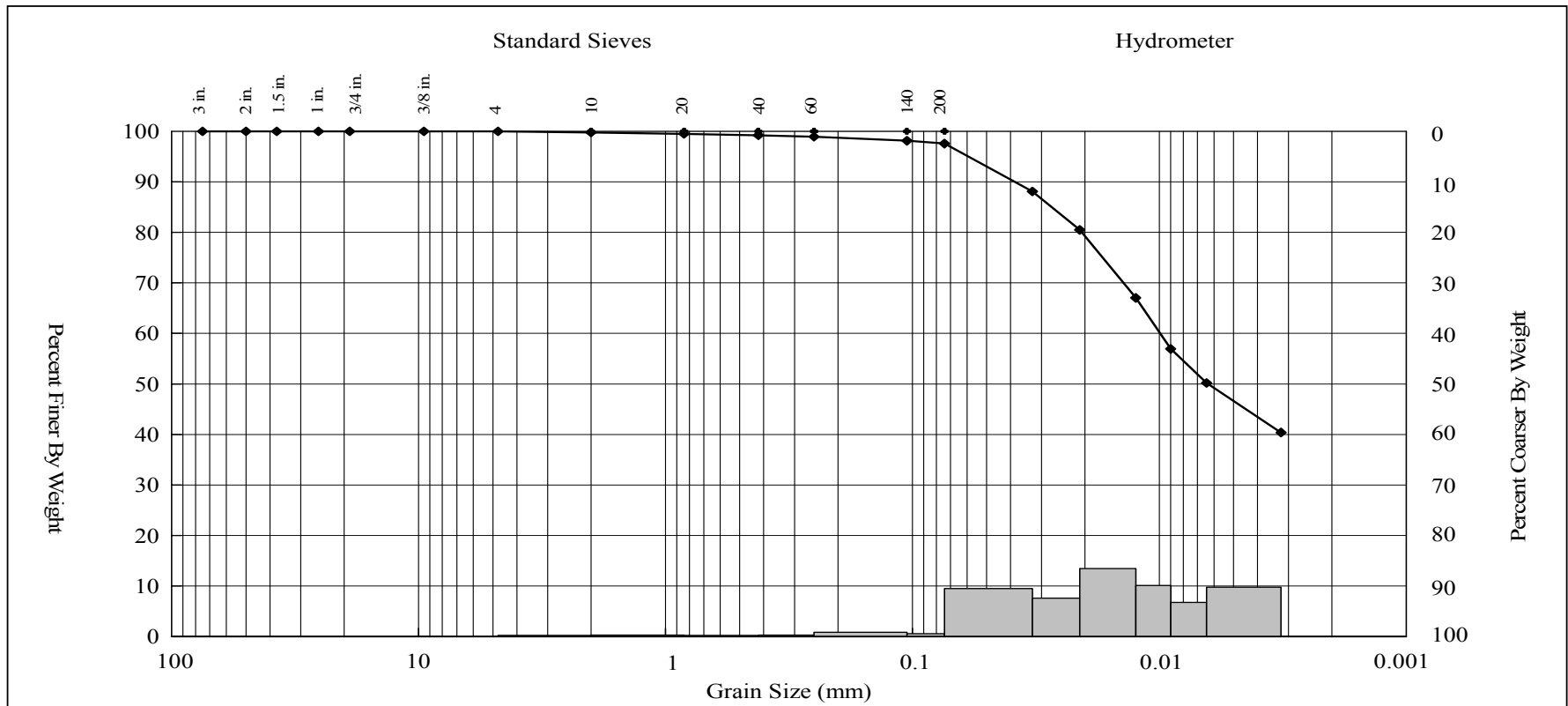
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.00		0.06	5.09		69.62		25.23			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		
26												
Material Description										Client Sample ID: HAC-007 0'-1' AMS Sample ID: 8C8-11		
Elastic Silt ("MH"), dark gray (N 4)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						

GEOTECHNICAL RESULTS



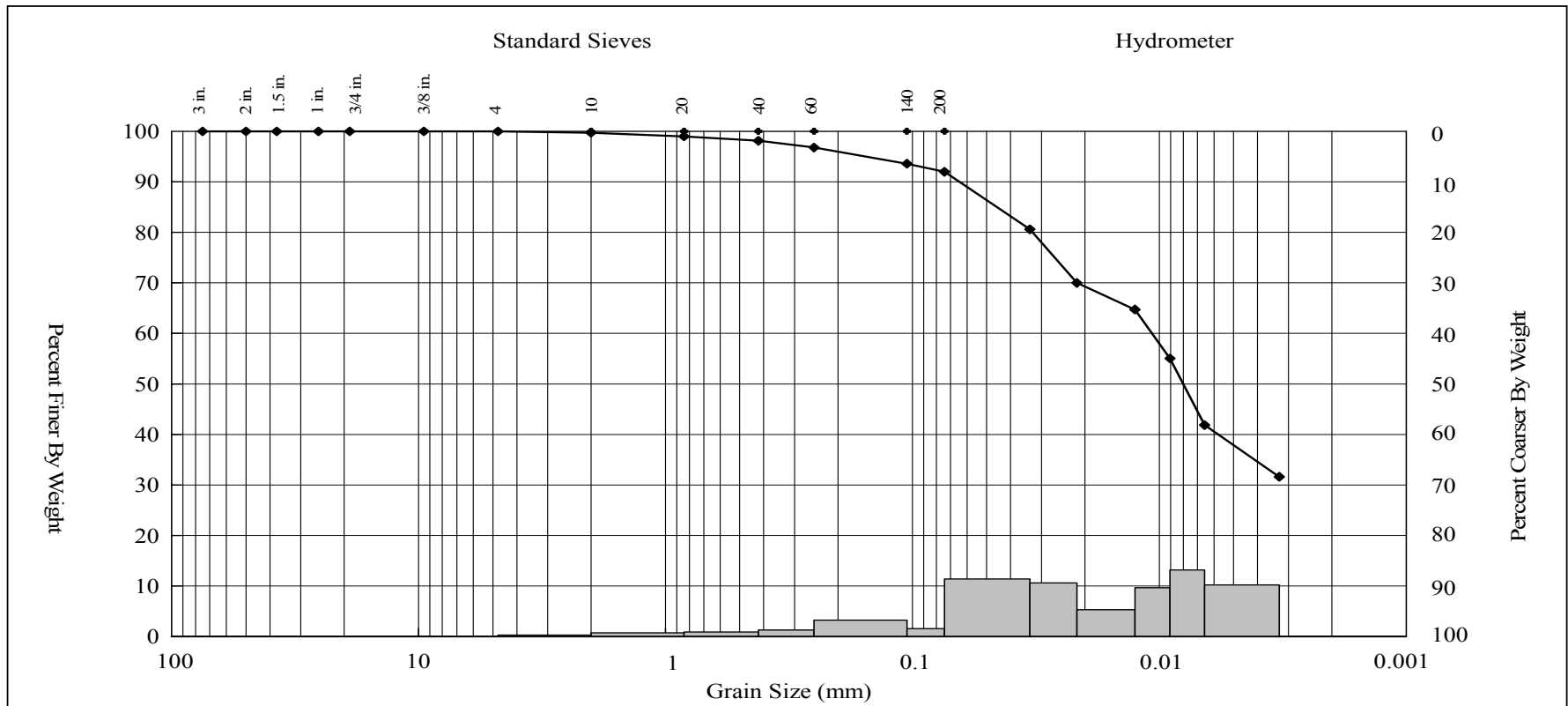
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422			
		Coarse	Medium	Fine		Silt	Clay						
0.00		0.16	0.11	4.37		67.04	28.32			Client Sample ID: HAC-007 1'-2' AMS Sample ID: 8C8-12			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
23													
Material Description													
Elastic Silt ("MH"), dark gray (N 4)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie C. S. Moore</i> AMS, Inc. Project Manager						 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956	

GEOTECHNICAL RESULTS



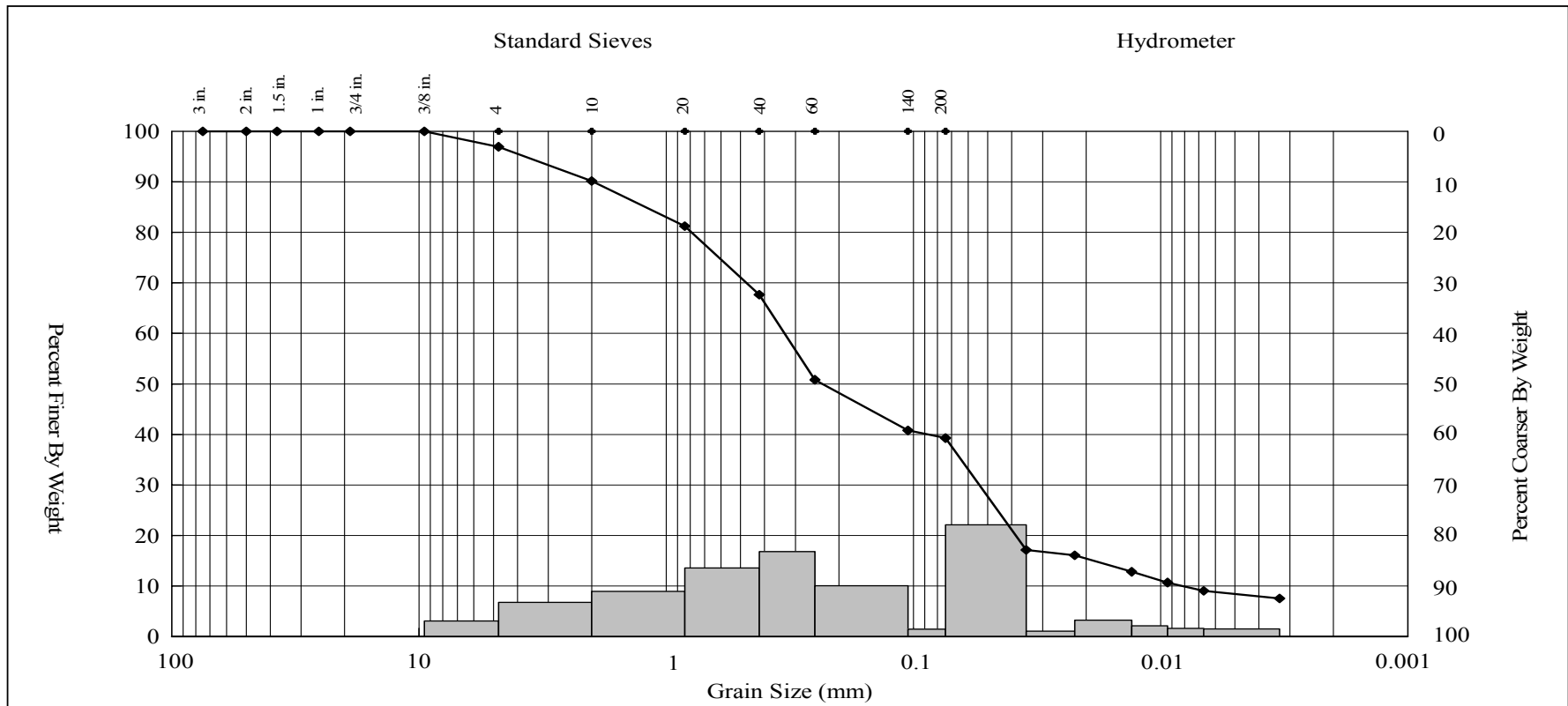
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422			
		Coarse		Medium	Fine	Silt		Clay					
0.00		0.24		0.54	1.66		51.71		45.85				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
117													
Material Description										Client Sample ID: HAC-009 0'-1' AMS Sample ID: 8C8-13			
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						
													

GEOTECHNICAL RESULTS



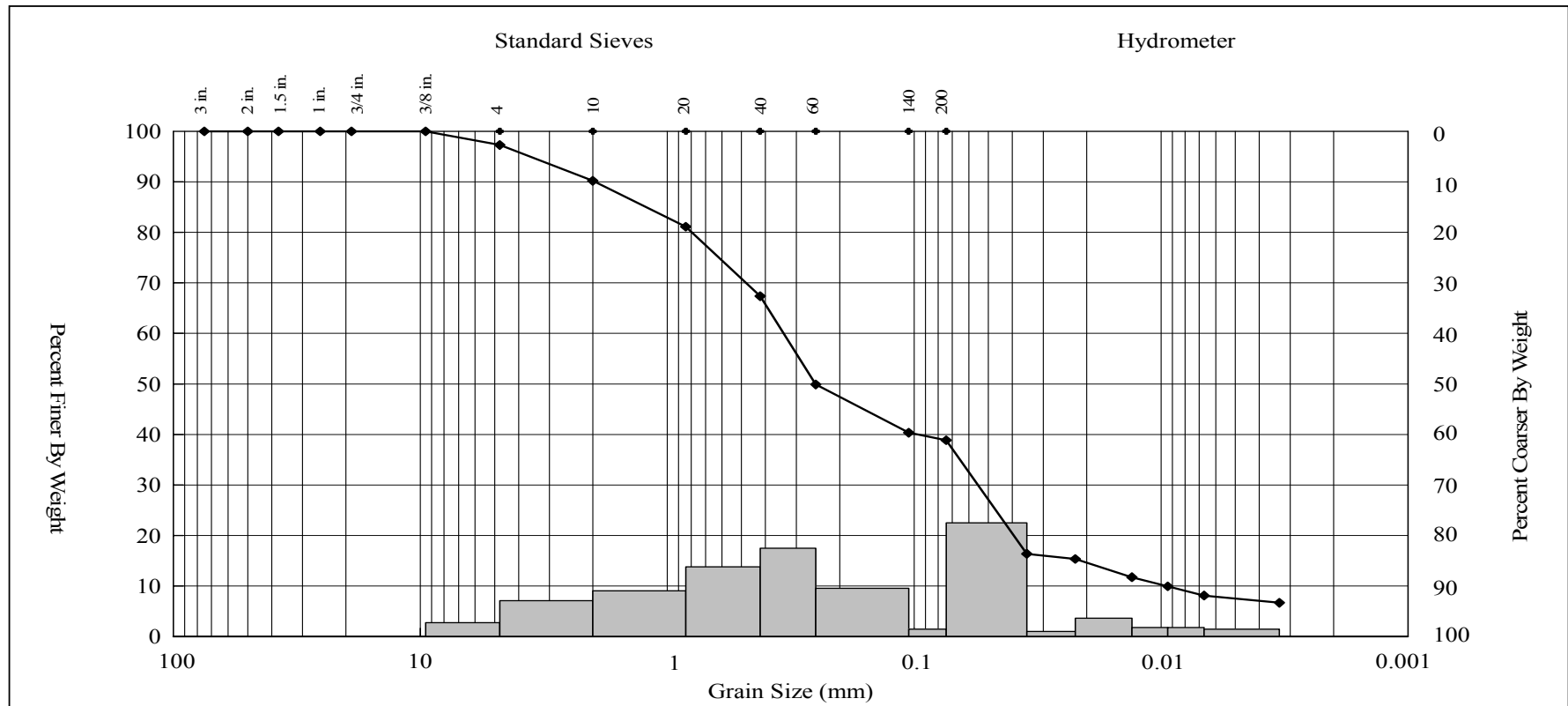
Gravel (%)		Sand (%)			Fines (%)						Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-009 1'-2' AMS Sample ID: 8C8-14
		Coarse	Medium	Fine	Silt		Clay				
0.00	0.28	1.61	6.14	54.93		37.04					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
116											
Material Description											
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)											
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager				 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
3.08		6.78		22.49	28.37	30.98		8.30				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		
57												
Material Description												
Silty Sand ("SM"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager				Client Sample ID: HAC-010 0'-1'	
											AMS Sample ID: 8C8-15	
							 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956					

GEOTECHNICAL RESULTS



Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
2.71		7.12		22.83	28.48	31.45		7.41				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
57												
Material Description										Client Sample ID: HAC-010 0'-1' AMS Sample ID: 8C8-15Q		
Silty Sand ("SM"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax					These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie C. S. Moore</i> AMS, Inc. Project Manager						 ACCREDITED IN ACCORDANCE WITH Laboratory No. E87956	

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: Searsport Harbor
 Project Number: G606441
 Client Sample ID: HAC-010 0'-1'
 AMS Sample ID: 8C8-15

AMS Project Number: 8C8
 Date Sampled: 5/1/2008
 Date Analyzed: 5/8/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 050808-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	3.08	2.71	12.78		≤ 25
2.00	No. 10	Coarse Sand	6.78	7.12	4.89		≤ 25
0.425	No. 40	Medium Sand	22.49	22.83	1.50		≤ 25
0.074	No. 200	Fine Sand	28.37	28.48	0.39		≤ 25
<0.074 - 0.005	Hydrometer	Silt	30.98	31.45	1.51		≤ 25
<0.005	Hydrometer	Clay	8.30	7.41	11.33		≤ 25

Samples in Batch:

8C8-1	8C8-4	8C8-7	8C8-10	8C8-13
8C8-2	8C8-5	8C8-8	8C8-11	8C8-14
8C8-3	8C8-6	8C8-9	8C8-12	8C8-15

Qualifiers:

Q - RPD value outside Quality Control Limits

I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).



APPLIED MARINE SCIENCES, INC.
 502 N. Hwy 3, Suite B
 League City, TX 77573
 281.554.7272 Tel.
 281.554.6356 Fax

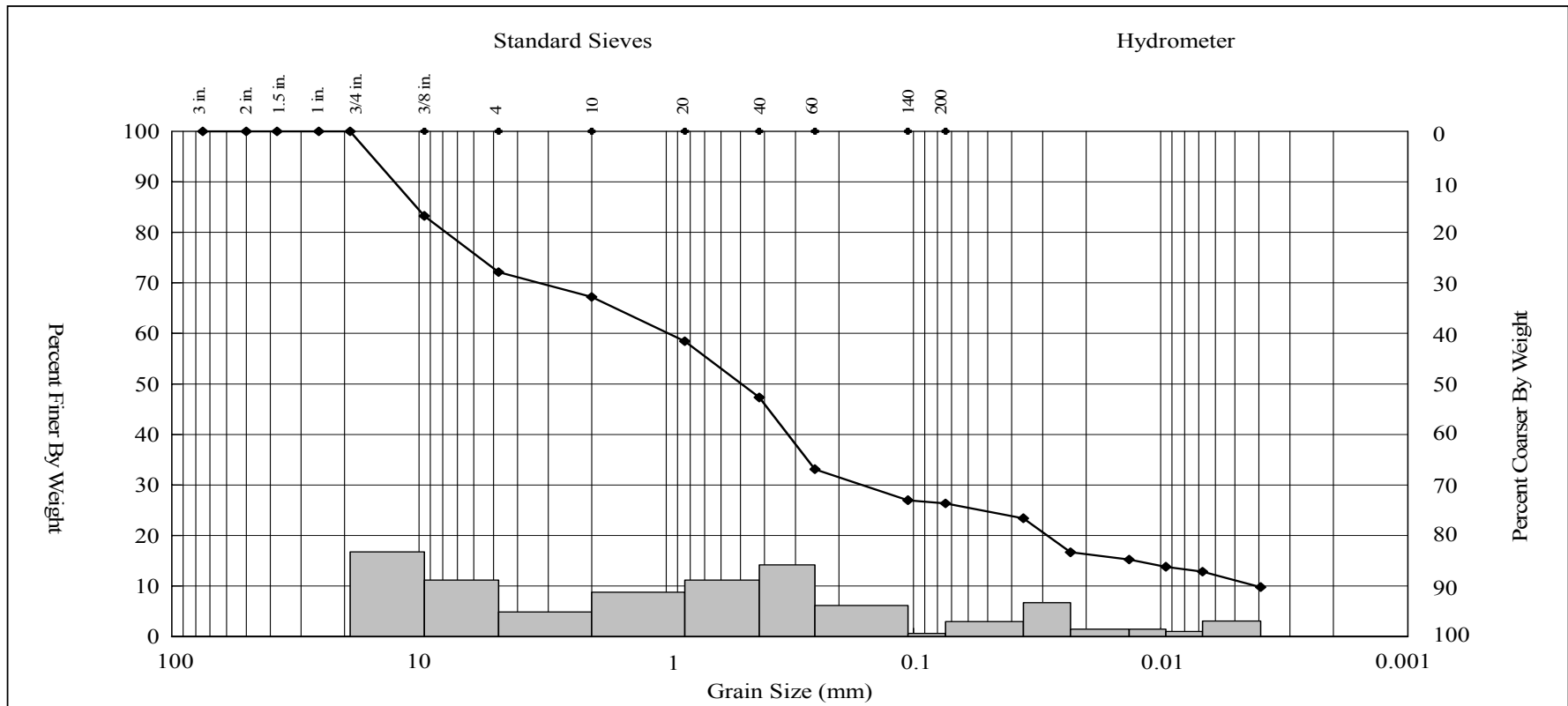
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Stephanie C. S. Moore

 AMS, Inc. Project Manager

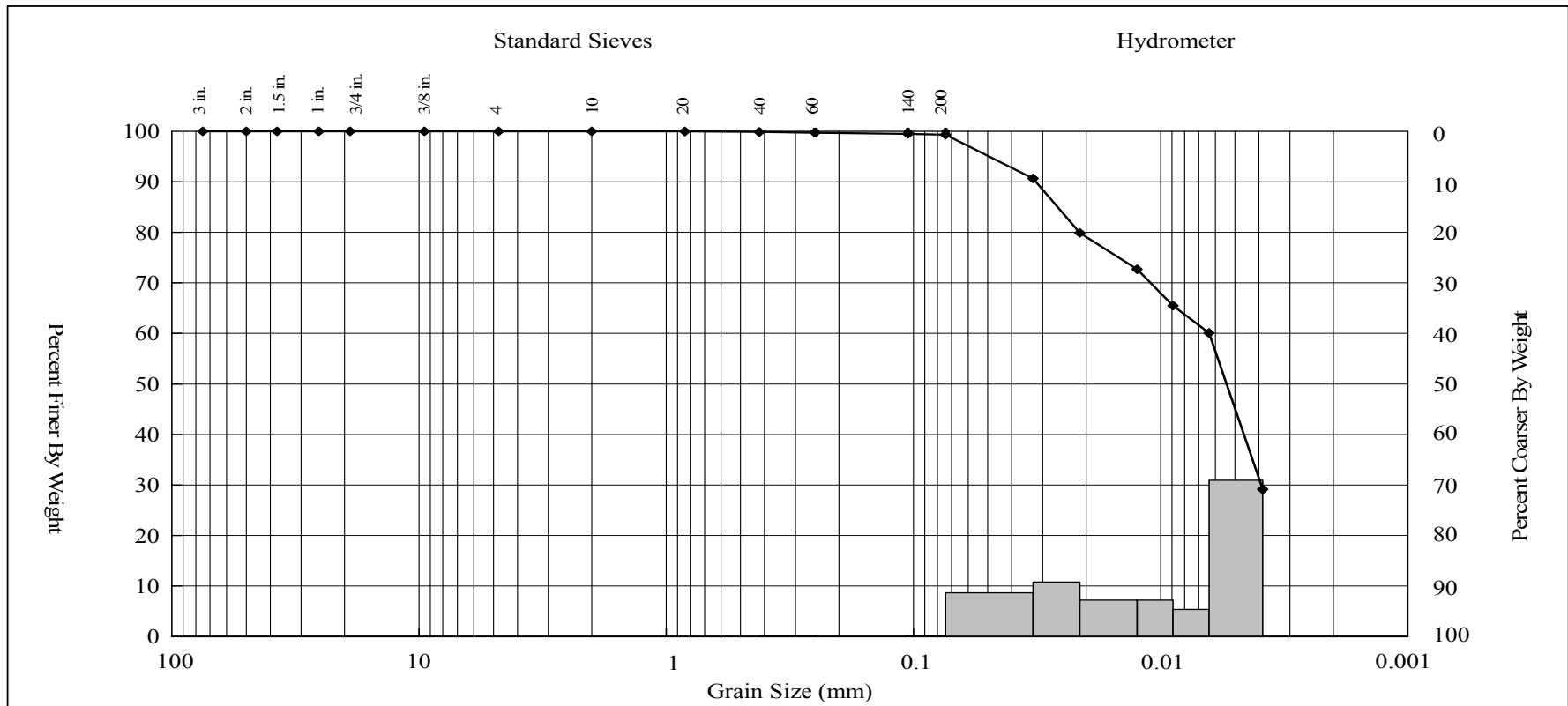


GEOTECHNICAL RESULTS



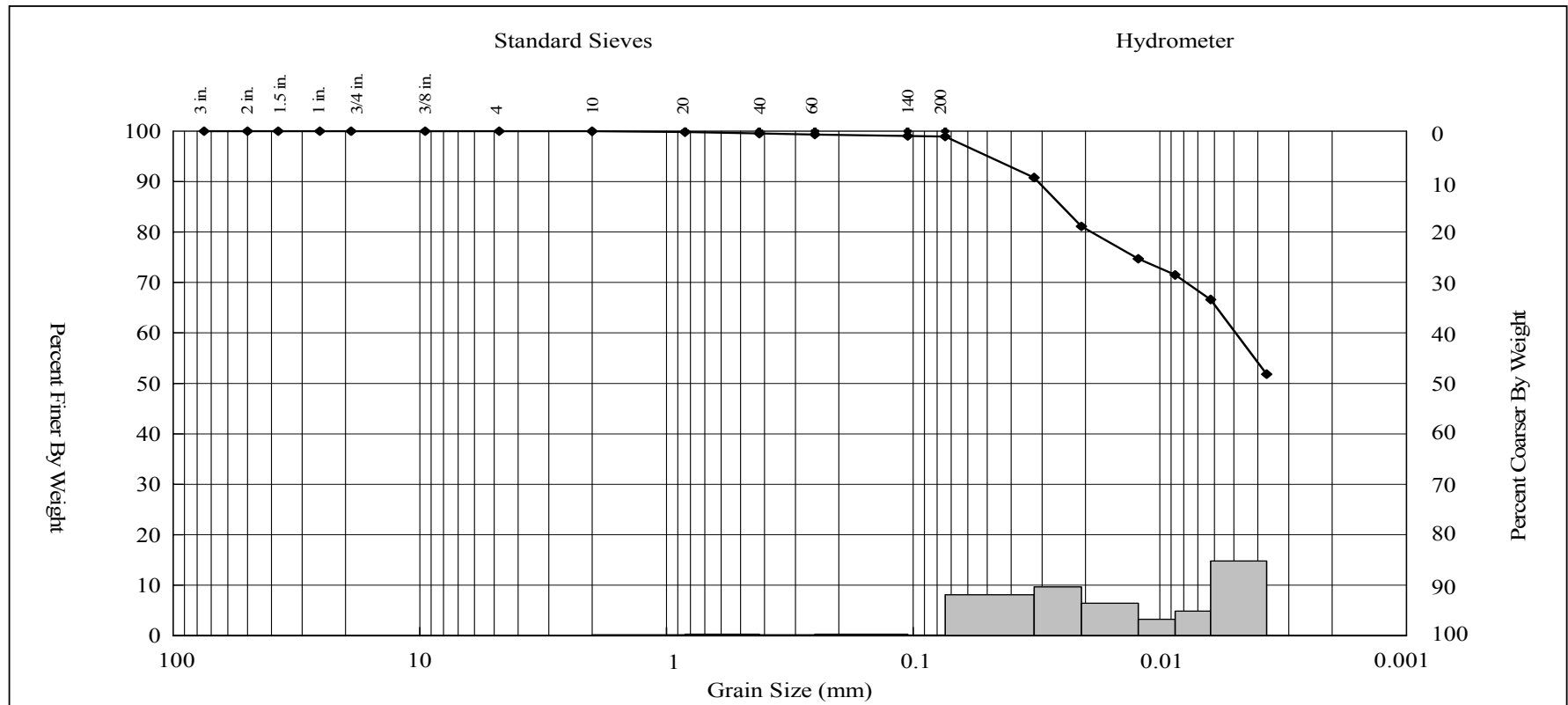
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-010 1'-2' AMS Sample ID: 8C8-16			
		Coarse	Medium	Fine	Silt	Clay							
27.88	4.89	19.91	20.96	15.42	10.94								
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
30													
Material Description													
Silty Sand with Gravel ("SM"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						
													

GEOTECHNICAL RESULTS



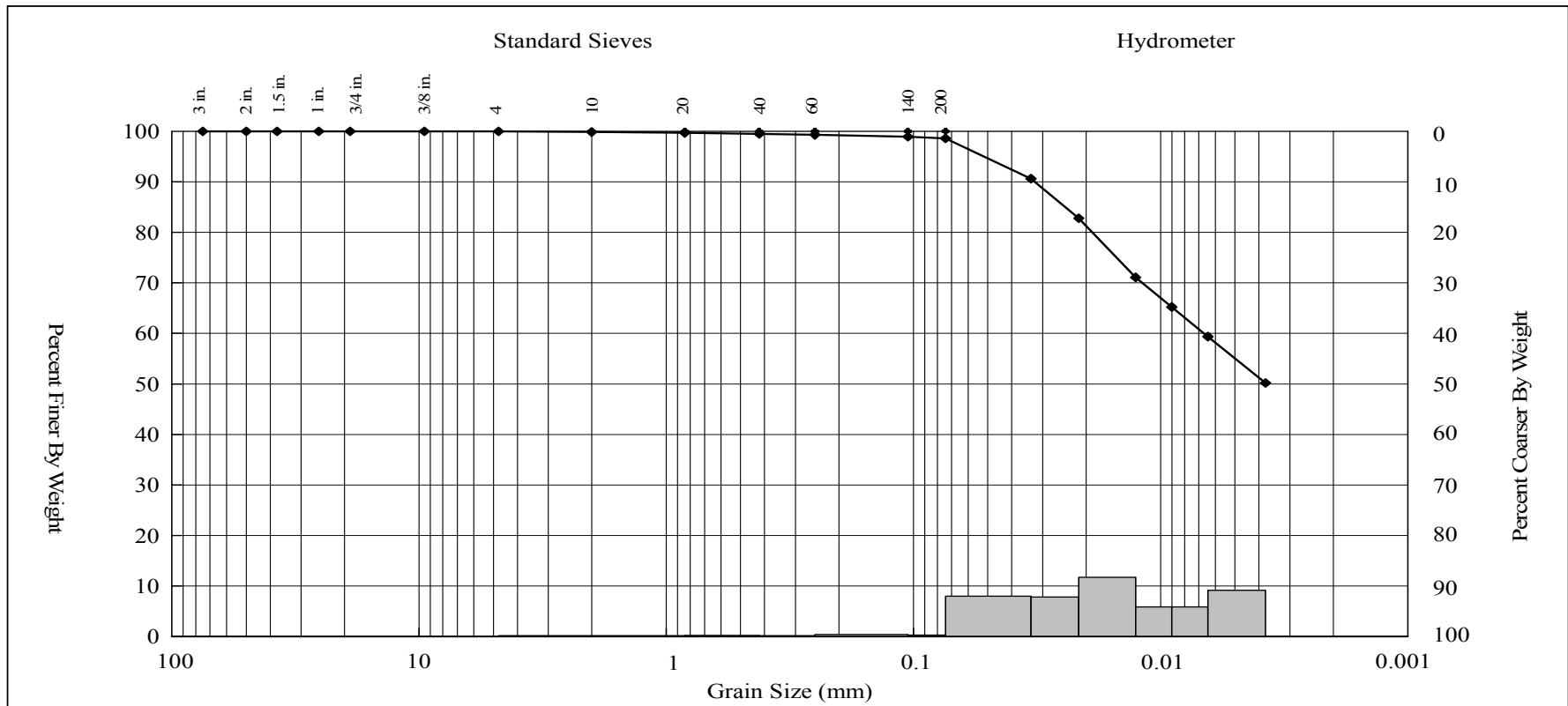
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422			
		Coarse		Medium	Fine	Silt		Clay					
0.00		0.00		0.15	0.53	56.08		43.24		Client Sample ID: HAC-001 0'-1' AMS Sample ID: 8C8-17			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
145													
Material Description													
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						ACCREDITED IN ACCORDANCE WITH  Laboratory No. E87956	

GEOTECHNICAL RESULTS



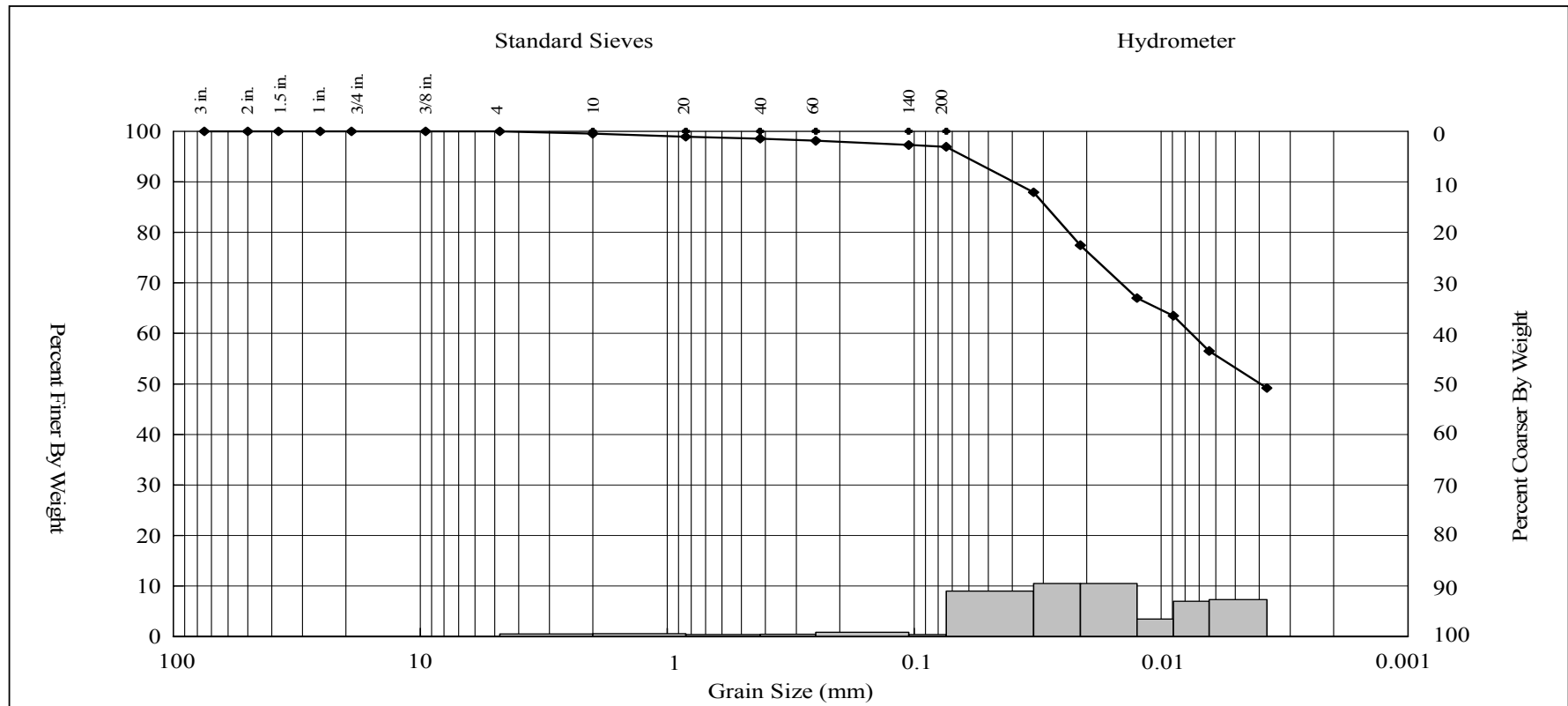
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 5/1/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-001 1'-2' AMS Sample ID: 8C8-18			
		Coarse		Medium	Fine	Silt		Clay					
0.00		0.05	0.44	0.59	39.34		59.58						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
118													
Material Description													
Lean Clay ("CL"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						 Laboratory No. E87956	

GEOTECHNICAL RESULTS



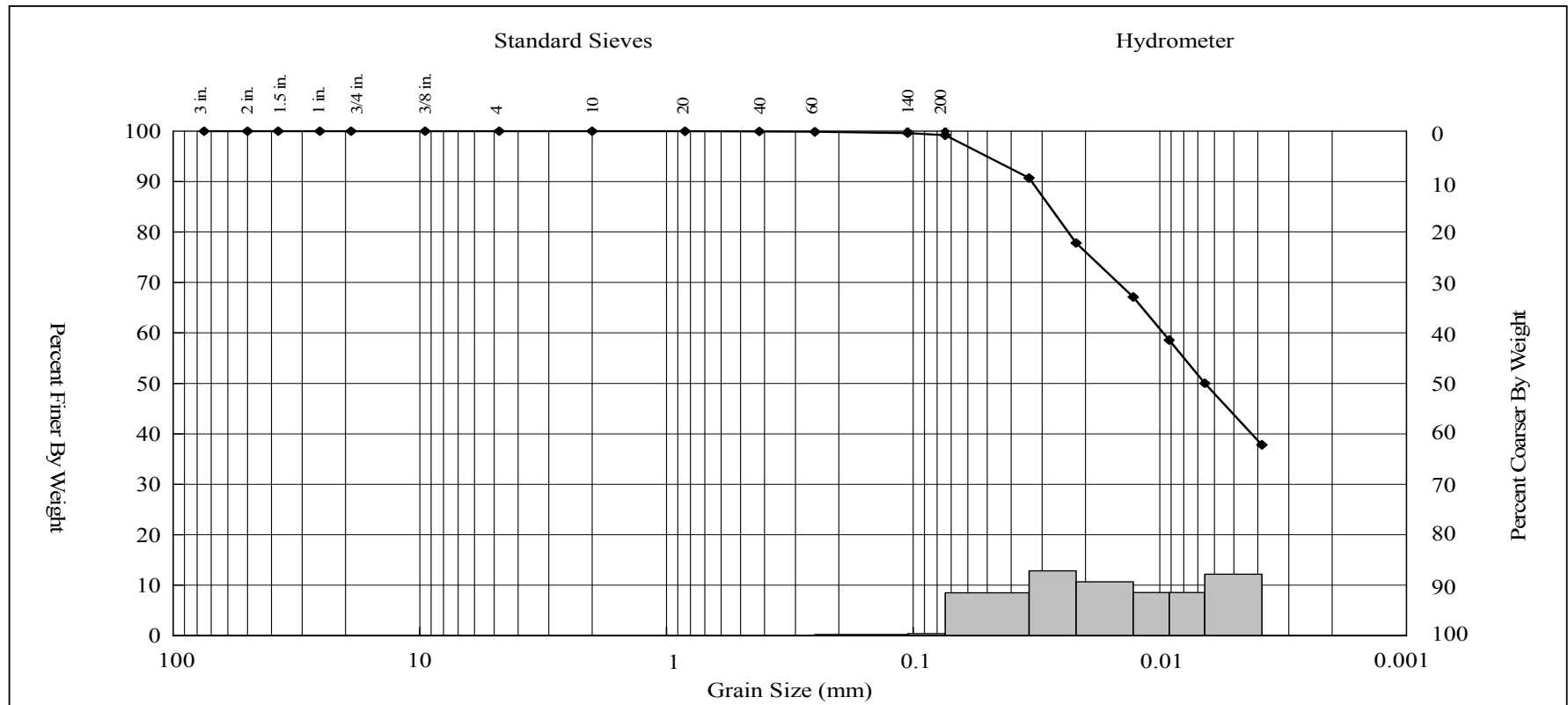
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.16		0.37	0.87	44.15		54.45		Client Sample ID: HAC-003 0'-1' AMS Sample ID: 8C8-19		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
127												
Material Description												
Lean Clay ("CL"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						
						 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956						

GEOTECHNICAL RESULTS



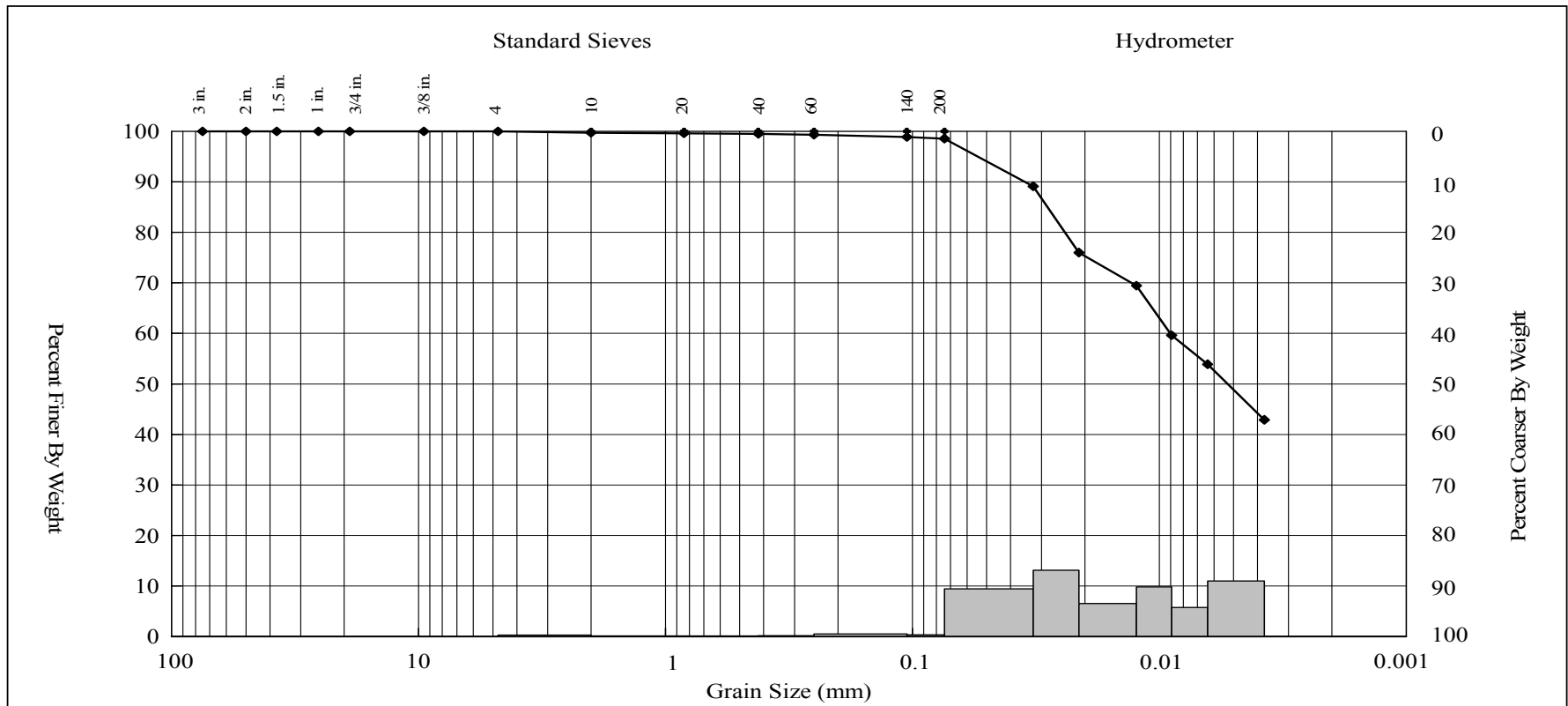
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422	
		Coarse	Medium	Fine	Silt	Clay					
0.00	0.49	0.95	1.66	44.18	52.72						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c		
123											
Material Description											Client Sample ID: HAC-003 1'-2' AMS Sample ID: 8C8-20
Lean Clay ("CL"), dark greenish gray (10Y 4/1)											
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie C. S. Moore AMS, Inc. Project Manager				

GEOTECHNICAL RESULTS



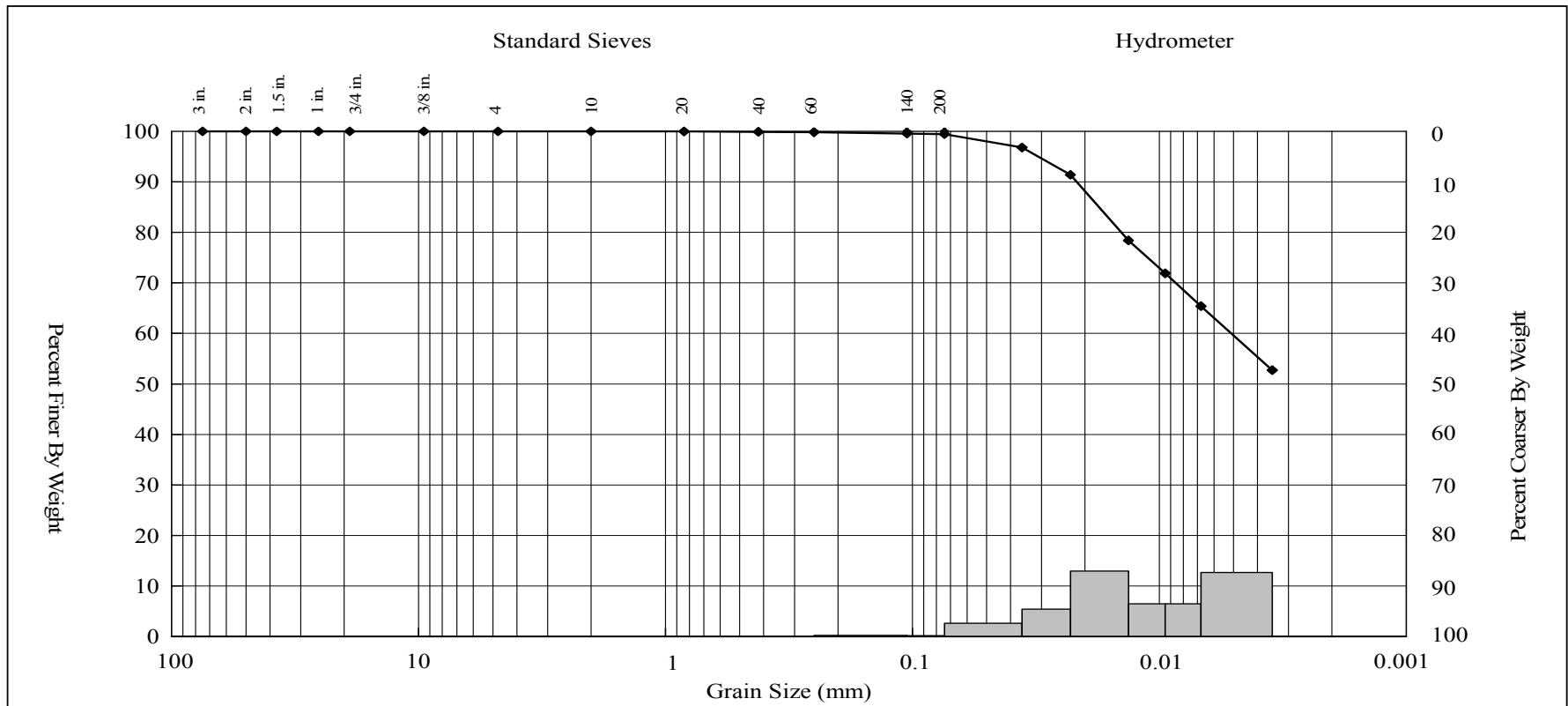
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.00		0.10	0.73	56.16		43.01				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u
185												
Material Description										Client Sample ID: HAC-006 0-1.9' AMS Sample ID: 8C8-21		
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						 ACCREDITED IN ACCORDANCE WITH Laboratory No. E87956

GEOTECHNICAL RESULTS



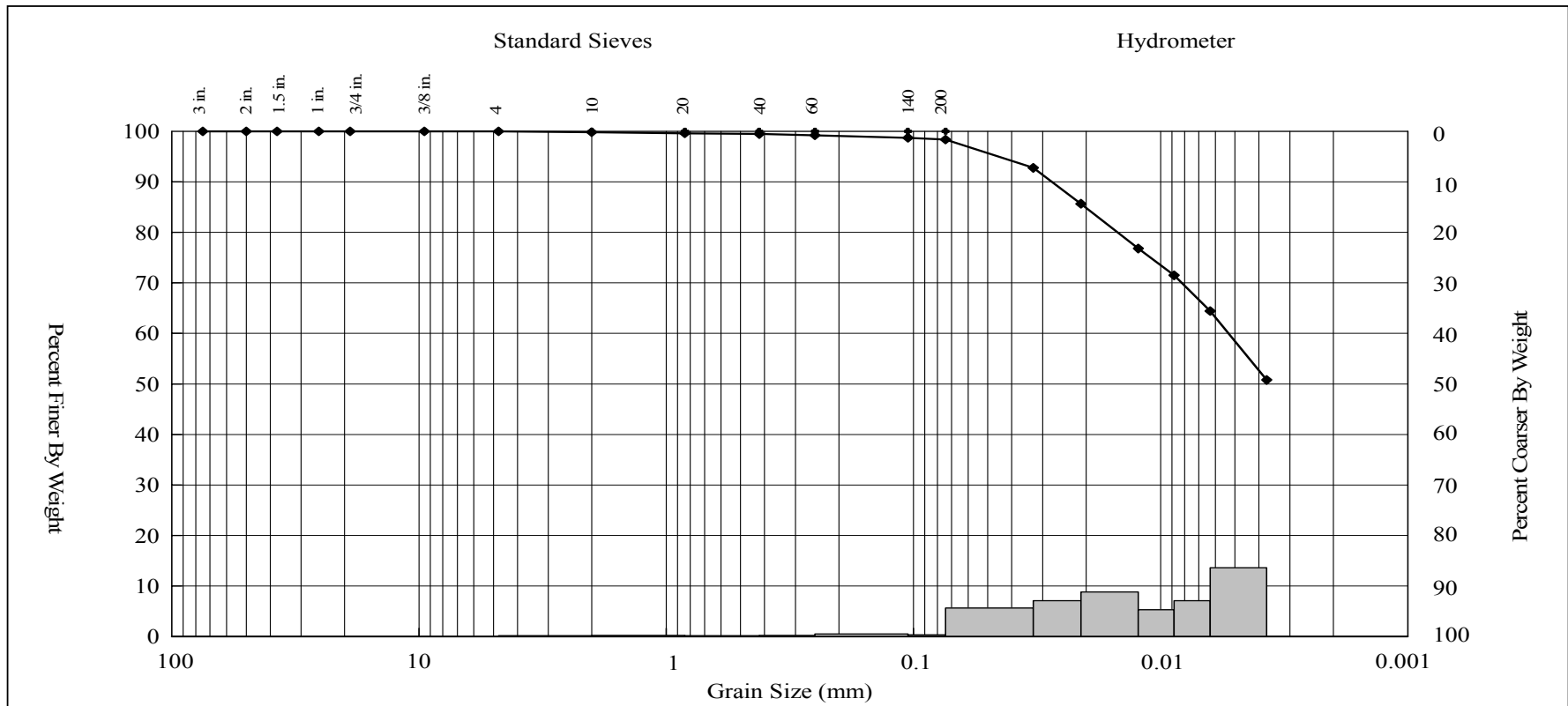
Gravel (%)		Sand (%)			Fines (%)						Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-006 1.9'-3.6' AMS Sample ID: 8C8-22		
		Coarse	Medium	Fine	Silt			Clay					
0.00		0.28	0.24	0.94	50.39			48.15					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u			
115													
Material Description													
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						
							 Laboratory No. E87956						

GEOTECHNICAL RESULTS



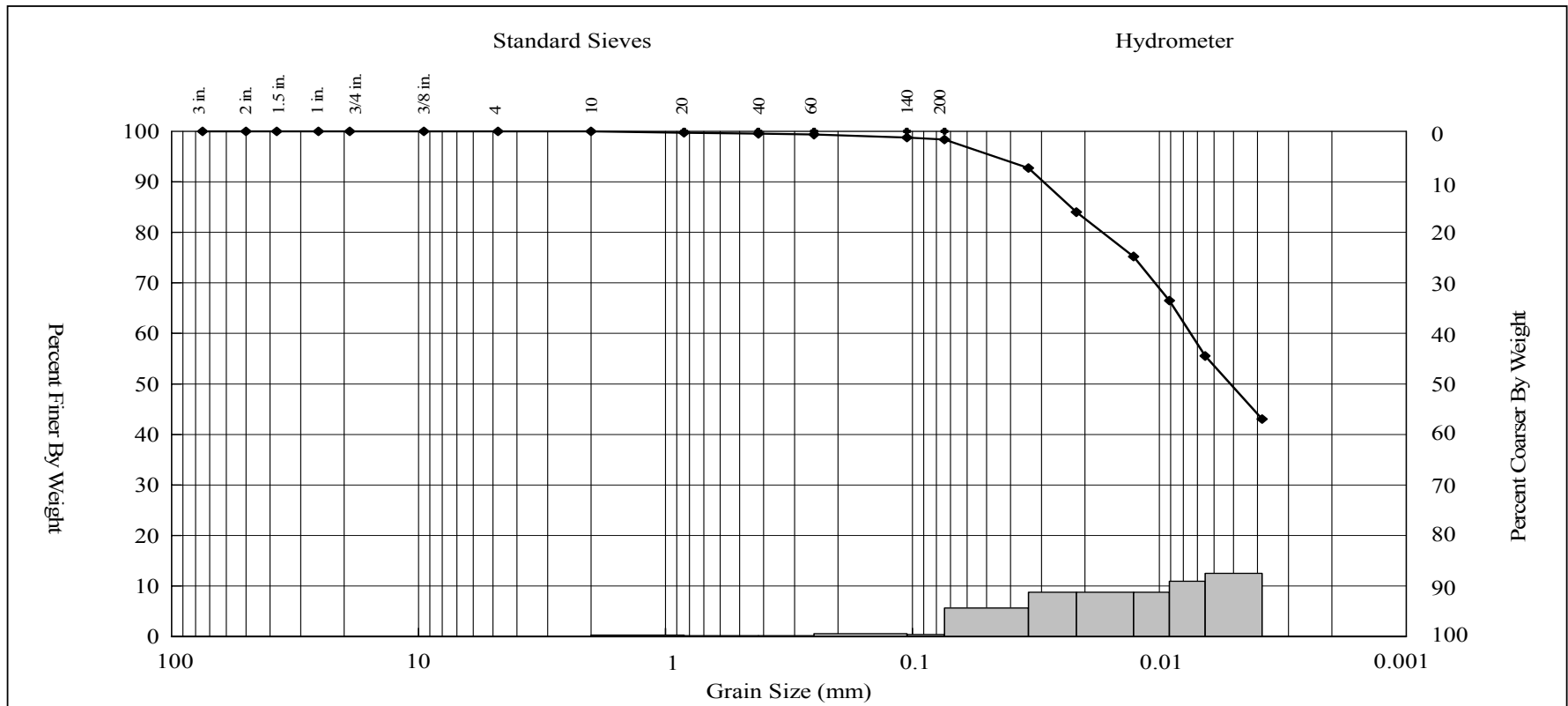
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.00		0.11	0.48		40.86		58.55			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		
29												
Material Description												
Lean Clay ("CL"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						

GEOTECHNICAL RESULTS



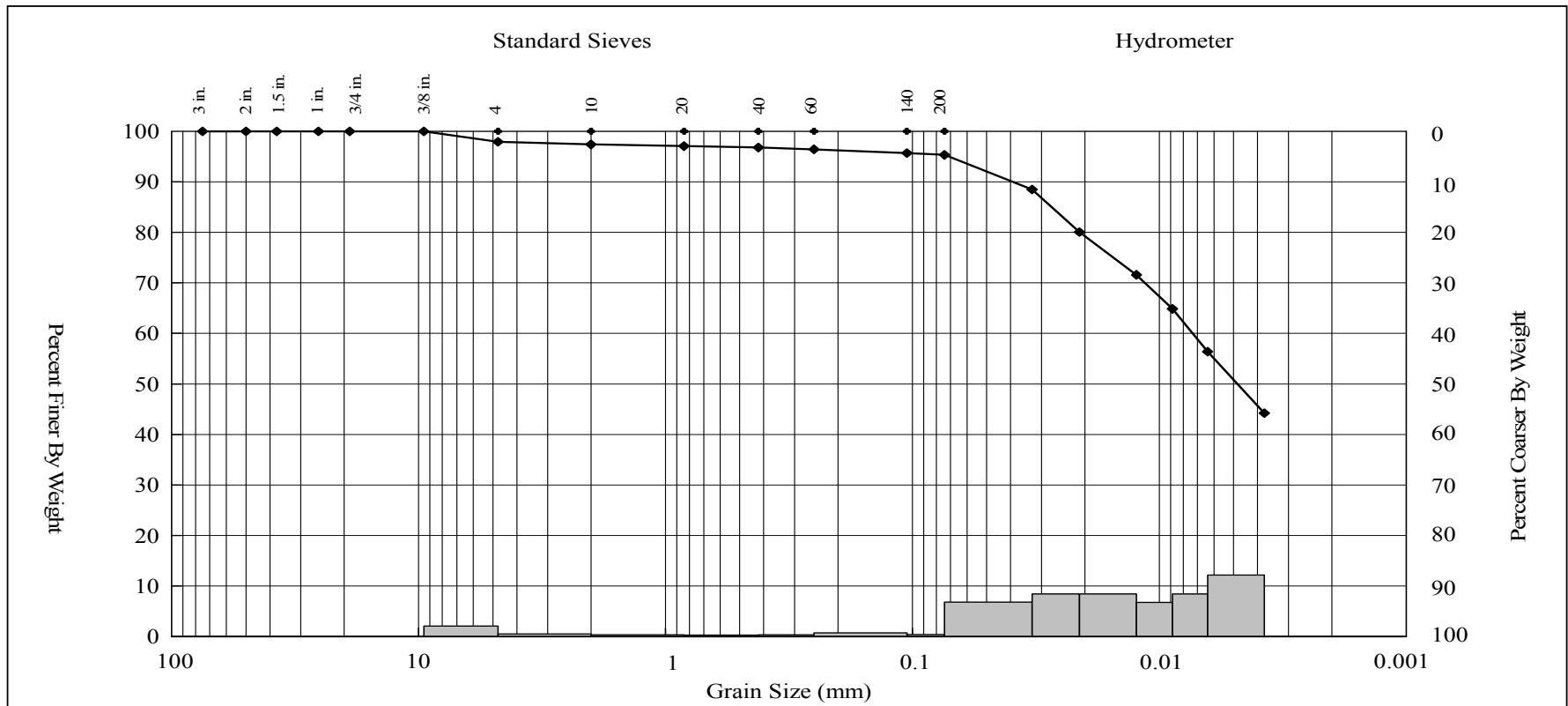
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422		
		Coarse		Medium	Fine	Silt		Clay				
0.00		0.17		0.38	1.09		40.81		57.55			
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: HAC-002 1'-2' AMS Sample ID: 8C8-25	
123												
Material Description												
Lean Clay ("CL"), dark greenish gray (10Y 4/1)												
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						

GEOTECHNICAL RESULTS



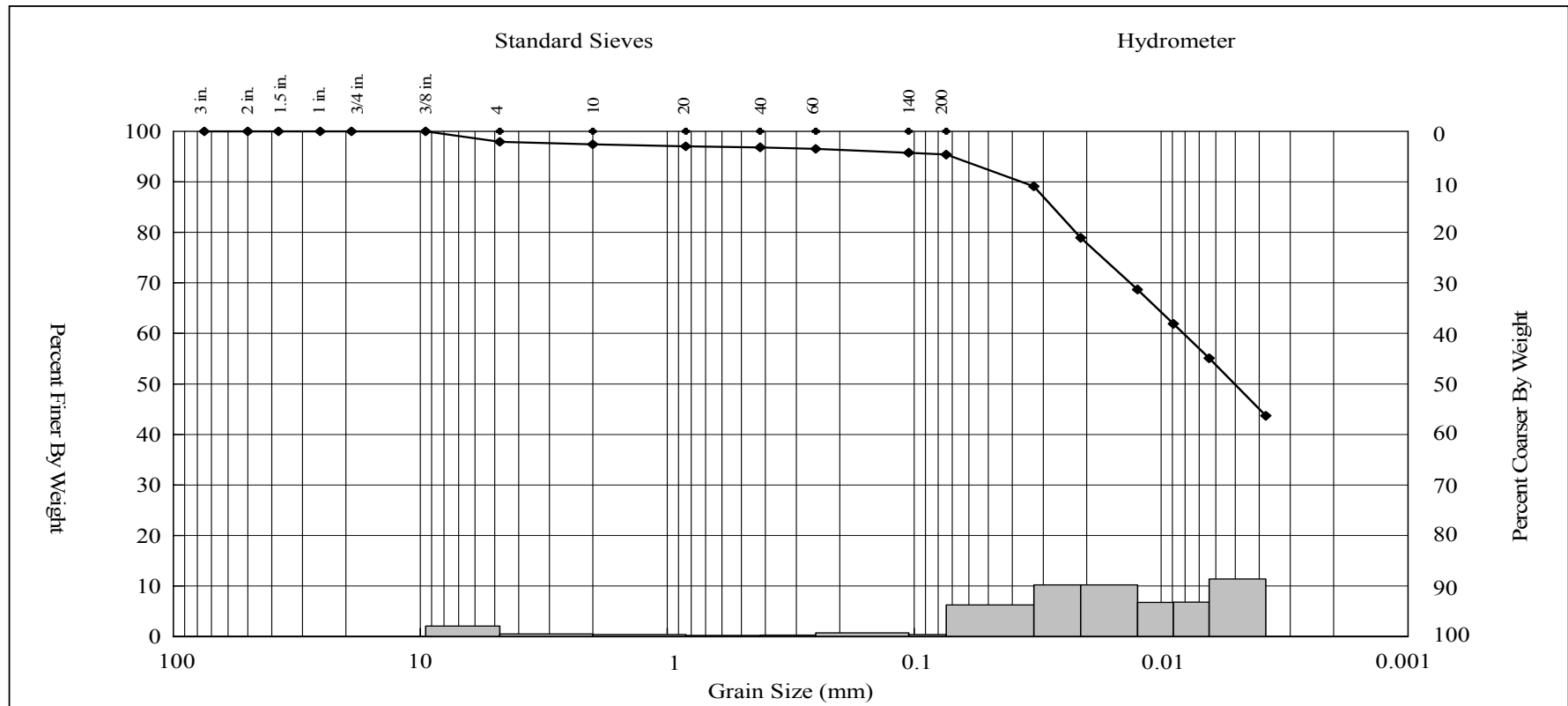
Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422			
		Coarse		Medium	Fine	Silt		Clay					
0.00		0.00		0.47	1.17		49.87		48.49				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c			C _u	
146													
Material Description										Client Sample ID: HAC-004 0-1' AMS Sample ID: 8C8-26			
Elastic Silt ("MH"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie L. S. Moore AMS, Inc. Project Manager						
													

GEOTECHNICAL RESULTS



Gravel (%)		Sand (%)			Fines (%)						Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-004 1'-2' AMS Sample ID: 8C8-27		
		Coarse	Medium	Fine	Silt			Clay					
2.09	0.52	0.61	1.47	45.26			50.05						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u			
112													
Material Description													
Lean Clay ("CL"), dark greenish gray (10Y 4/1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Stephanie L. S. Moore</i> AMS, Inc. Project Manager						
							 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956						

GEOTECHNICAL RESULTS



Gravel (%)		Sand (%)				Fines (%)				Client: Battelle Client Project Title: Searsport Harbor Client Project Number: G606441 AMS Project Number: 8C8 Date Sampled: 4/30/2008 Date Analyzed: 5/8/2008 Matrix, Method: Sediment, ASTM D 422 Client Sample ID: HAC-004-1'-2' AMS Sample ID: 8C8-27Q	
		Coarse	Medium	Fine		Silt	Clay				
2.10	0.50	0.59	1.42	46.29	49.10						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c		
112											
Material Description											
Lean Clay ("CL"), dark greenish gray (10Y 4/1)											
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax							These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. Stephanie C. S. Moore AMS, Inc. Project Manager				
							 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956				

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: Searsport Harbor
 Project Number: G606441
 Client Sample ID: HAC-004-1'-2'
 AMS Sample ID: 8C8-27

AMS Project Number: 8C8
 Date Sampled: 4/30/2008
 Date Analyzed: 5/8/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 050808-02G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	2.09	2.10	0.48		≤ 25
2.00	No. 10	Coarse Sand	0.52	0.50	3.92		≤ 25
0.425	No. 40	Medium Sand	0.61	0.59	3.33		≤ 25
0.074	No. 200	Fine Sand	1.47	1.42	3.46		≤ 25
<0.074 - 0.005	Hydrometer	Silt	45.26	46.29	2.25		≤ 25
<0.005	Hydrometer	Clay	50.05	49.10	1.92		≤ 25

Samples in Batch:

8C8-16	8C8-19	8C8-22	8C8-25
8C8-17	8C8-20	8C8-23	8C8-26
8C8-18	8C8-21	8C8-24	8C8-27

Qualifiers:

Q - RPD value outside Quality Control Limits

I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).



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These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Stephanie C. S. Moore

 AMS, Inc. Project Manager





Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-008 1-2'
AMS Sample ID: 8C8-1

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.67	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	97	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	41	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	56	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
AMS, Inc. Technical Director



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-008 0-1'
AMS Sample ID: 8C8-2

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.62	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	92	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	39	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	53	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-012
AMS Sample ID: 8C8-3

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.66	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-013
AMS Sample ID: 8C8-4

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.66	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-014
AMS Sample ID: 8C8-5

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.64	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-015
AMS Sample ID: 8C8-6

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.65	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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AMS, Inc. Technical Director



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-016
AMS Sample ID: 8C8-7

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.68	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-017
AMS Sample ID: 8C8-8

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.68	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-005 0-1'
AMS Sample ID: 8C8-9

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.68	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-005 1-2'
AMS Sample ID: 8C8-10

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.57	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	73	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	40	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	33	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-007 0-1'
AMS Sample ID: 8C8-11

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.72	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-007 1-2'
AMS Sample ID: 8C8-12

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.72	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-009 0-1'
AMS Sample ID: 8C8-13

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.67	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-009 1-2'
AMS Sample ID: 8C8-14

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.65	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	94	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	39	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	55	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-010 0-1'
AMS Sample ID: 8C8-15

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.63	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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AMS, Inc. Technical Director



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SPECIFIC GRAVITY QUALITY CONTROL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Matrix: Sediment
Method: ASTM D 854

AMS Project Number: 8C8
Date Analyzed: 10/26/2007
Batch ID: 052408-01S

Sample Duplicate Results:

AMS Sample ID	Result	Duplicate Result	Relative % Difference (%)	Data Qualifier	QC Limits
8C8-15	2.63	2.64	0.38		≤ 25 RPD

Samples in Batch (AMS ID):

8C8-1	8C8-4	8C8-7	8C8-10	8C8-13
8C8-2	8C8-5	8C8-8	8C8-11	8C8-14
8C8-3	8C8-6	8C8-9	8C8-12	8C8-15

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer Davis
AMS, Inc. Technical Director



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QUALITY CONTROL

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor

AMS Project Number: 8C8

Data Qualifiers:

- U Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
- J The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
- B Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
- Q One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
- I Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

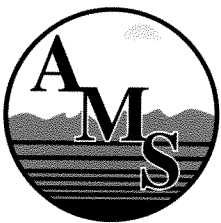
Definitions:

- LOD The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
- LOQ The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC samples not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.



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ANALYTICAL RESULTS

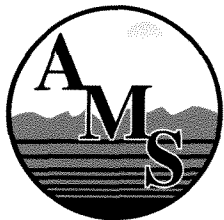
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-010 1-2'
AMS Sample ID: 8C8-16

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.69	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
AMS, Inc. Technical Director



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-001 0-1'
AMS Sample ID: 8C8-17

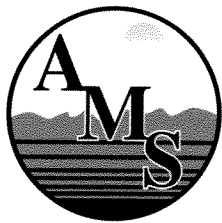
AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.64	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	116	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	49	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	67	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis

AMS, Inc. Technical Director



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ANALYTICAL RESULTS

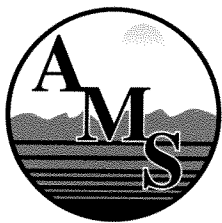
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-001 1-2'
AMS Sample ID: 8C8-18

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.68	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

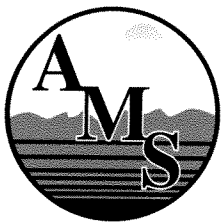
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-003 0-1'
AMS Sample ID: 8C8-19

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.65	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	103	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	43	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	60	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
AMS, Inc. Technical Director



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

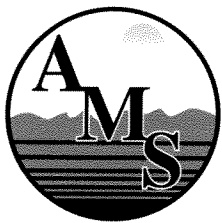
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-003 1-2'
AMS Sample ID: 8C8-20

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.67	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-006 0-1.9'
AMS Sample ID: 8C8-21

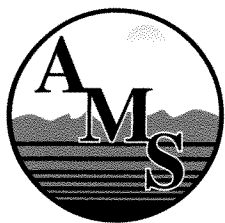
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.61	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	115	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	45	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	70	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-006 1.9-3.6'
AMS Sample ID: 8C8-22

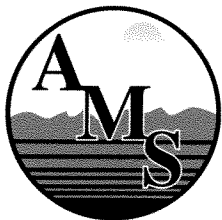
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.67	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-006 3.6-7.3'
AMS Sample ID: 8C8-23

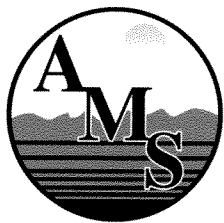
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.78	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

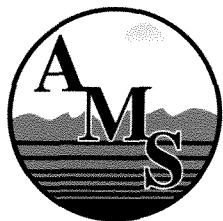
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-002 0-1'
AMS Sample ID: 8C8-24

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.64	none		0.01	0.01	ASTM D 854	5/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-002 1-2'
AMS Sample ID: 8C8-25

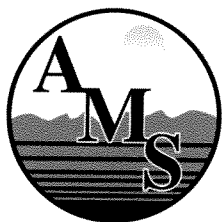
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.66	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	105	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	43	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	62	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

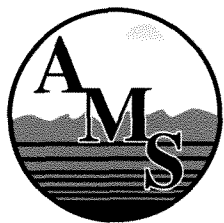
Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-004 0-1'
AMS Sample ID: 8C8-26

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/7/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.66	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	111	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	46	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	65	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-004 1-2'
AMS Sample ID: 8C8-27

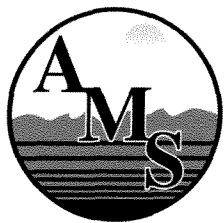
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 1/0/1900
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>MDL</u>	<u>LOD</u>	<u>Method</u>	<u>Date Analyzed</u>
Specific Gravity	2.67	none		0.01	0.01	ASTM D 854	5/24/2008
Liquid Limit	104	none		1	1	ASTM D 4318	5/23/2008
Plastic Limit	44	none		1	1	ASTM D 4318	5/23/2008
Plasticity Index	60	none		1	1	ASTM D 4318	5/23/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Jennifer Davis

AMS, Inc. Technical Director



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SPECIFIC GRAVITY QUALITY CONTROL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Matrix: Sediment
Method: ASTM D 854

AMS Project Number: 8C8
Date Analyzed: 10/26/2007
Batch ID: 052408-02S

Sample Duplicate Results:

AMS Sample ID	Result	Duplicate Result	Relative % Difference (%)	Data Qualifier	QC Limits
8C8-27	2.67	2.68	0.37		≤ 25 RPD

Samples in Batch (AMS ID):

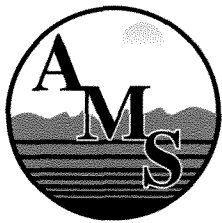
8C8-16	8C8-19	8C8-22	8C8-25
8C8-17	8C8-20	8C8-23	8C8-26
8C8-18	8C8-21	8C8-24	8C8-27

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer Davis

AMS, Inc. Technical Director



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QUALITY CONTROL

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor

AMS Project Number: 8C8

Data Qualifiers:

- U Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
- J The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
- B Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
- Q One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
- I Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

- LOD The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
- LOQ The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC samples not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer Davis

AMS, Inc. Technical Director

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

Method Reference Numbers: ASTM D422 (Particle Size Analysis of Soils) and EPA 9060A (Total Organic Carbon)

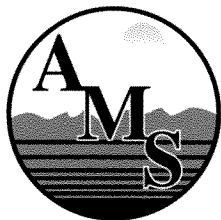
Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List Results Outside Criteria (Cross-Reference Results Table in Data Report)	Location of Results (Retained at Lab or in Data Package)
Grain Size: Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD<25%)	Yes	None	In Data Package
Total Organic Carbon: Standard Reference Materials	Within the limits provided by vendor			
Total Organic Carbon: Analytical Replicates	Analyze samples in duplicate (RPD<30%)			

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

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TOC Data

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-012
AMS Sample ID: 8C8-28

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

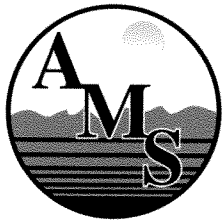
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.67	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.65	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis

AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-013
AMS Sample ID: 8C8-29

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

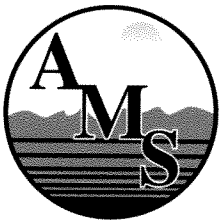
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.66	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.70	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis

AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-014
AMS Sample ID: 8C8-30

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

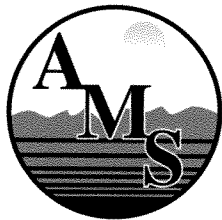
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.67	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.74	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-015
AMS Sample ID: 8C8-31

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

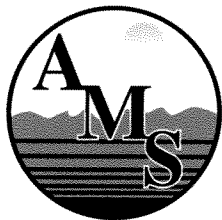
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.15	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.16	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Seaport Harbor
Client Sample ID: HAC-016
AMS Sample ID: 8C8-32

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

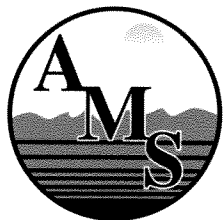
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.16	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.13	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Seaport Harbor
Client Sample ID: HAC-017
AMS Sample ID: 8C8-33

AMS Project Number: 8C8
Date Sampled: 5/2/2008
Date Received: 5/16/2008
Matrix: Sediment

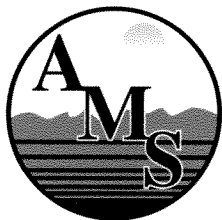
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.12	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.15	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis

AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-019
AMS Sample ID: 8C8-34

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/16/2008
Matrix: Sediment

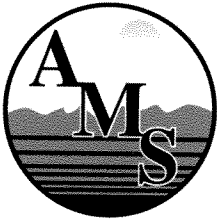
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.41	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.48	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis

AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Seaport Harbor
Client Sample ID: HAC-020
AMS Sample ID: 8C8-35

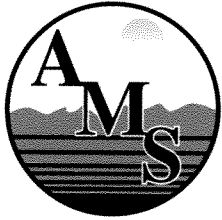
AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/16/2008
Matrix: Sediment

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	2.53	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	2.54	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Jennifer Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Seaport Harbor
Client Sample ID: HAC-021
AMS Sample ID: 8C8-36

AMS Project Number: 8C8
Date Sampled: 4/30/2008
Date Received: 5/16/2008
Matrix: Sediment

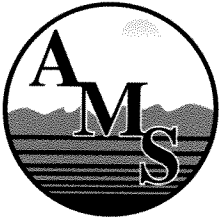
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	1.58	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	1.59	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Client Sample ID: HAC-022
AMS Sample ID: 8C8-37

AMS Project Number: 8C8
Date Sampled: 5/1/2008
Date Received: 5/16/2008
Matrix: Sediment

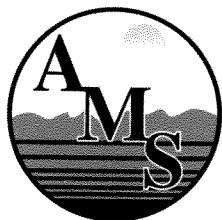
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Date Analyzed</u>
Total Organic Carbon	0.97	%		0.01	0.03	EPA 9060A	5/22/2008
Total Organic Carbon	1.00	%		0.01	0.03	EPA 9060A	5/22/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC sample not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor
Matrix: Sediment
Method: EPA 9060A

AMS Project Number: 8C8
Date Analyzed: 5/22/2008
Batch ID: 052208-01

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.14	3.23	2.83		0.01	0.03	≤ 5 RPD
ICCV-01	2.10	2.00	4.88		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C8-37	0.97	1.00	3.05		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C8-28 8C8-31 8C8-34 8C8-37
8C8-29 8C8-32 8C8-35
8C8-30 8C8-33 8C8-36

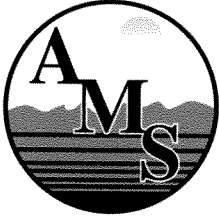
Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC samples not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer Davis

AMS, Inc. Project Manager



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QUALITY CONTROL

Client: Battelle
Project Number: G606441
Project Name: Searsport Harbor

AMS Project Number: 8C8

Data Qualifiers:

- U Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
- J The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
- B Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
- Q One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
- I Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

- LOD The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
- LOQ The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance:

These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

- * TOC samples not analyzed in quadruplicate
- * TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer Davis
AMS, Inc. Project Manager

PCB and Pesticide Data

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Pesticide/PCB – Sediment QA/QC Summary

Batch 08-0130

PROJECT: USACE/NED – Searsport Sediment Analysis
PARAMETER: Pesticide/PCB
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment cores for this project were composited on 4/30/2008, 4/1/2008, and 5/2/2008. The composites were hand delivered to the Chemistry Sample Custodian on 5/15/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. Composite sediment samples were stored in the walk-in freezer until sample preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	SRM Percent Difference	Sample Replicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
Pesticide /PCB	General NS&T	<5xMDL	30-150% Recovery	50-120% Recovery	50-120% Recovery (analyte conc. in MS must be >5x background)	Average PD ≤ 30% (plus variance) (for analytes > 5x MDL)	≤30% RPD (analytes must be > 10x MDL to be used for data quality assessment)	MDL: 0.06 – 3.67 RL: 0.36 – 28.75

METHOD: Sediment samples were extracted for PCB and pesticides following general NS&T methods. Approximately 30 g of sediment was spiked with surrogates and extracted three times with dichloromethane using shaker table techniques. The combined extract was dried over anhydrous sodium sulfate, concentrated, processed through activated copper, alumina cleanup column, concentrated, and further purified by GPC/HPLC. The post-HPLC extract was concentrated, fortified with internal standards (IS) and split for the required analyses. Extracts intended for PCB/Pest analysis were solvent exchanged into hexane and then analyzed using gas chromatography/electron capture detector (GC/ECD), following general NS&T methods. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Frozen sediment samples were prepared for analysis in one analytical batch and were extracted within 1 year of sample collection. All extracts were analyzed within 40 days of extraction.

<u>Batch</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0130	5/27/2008	6/2/2008 – 6/4/2008

Pesticide/PCB – Sediment QA/QC Summary
Batch 08-0130

BLANK:	A procedural blank (PB) was prepared with the analytical batch. The PB was analyzed to ensure the sample extraction and analysis methods were free of contamination. 08-0130 – No target analytes were detected in the procedural blank. Comments – None.
LABORATORY CONTROL SAMPLE:	A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. 08-0130 – All percent recoveries of spiked target analytes were within the laboratory control limit (50-120%). Comments – None.
MATRIX SPIKE/MATRIX SPIKE DUPLICATE:	A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision. 08-0130 – All percent recoveries of spiked target analytes were within the laboratory control limit (50-120%). All RPDs were within the laboratory control limits (< 30%). Comments – None.
REPLICATES:	Duplicate analysis was performed with each analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision. 08-0130 – The RPDs between duplicate analyses of all target analytes were within the laboratory control limits (<30% RPD). Comments – None.
SRM:	A standard reference material (NIST SRM 1944) was prepared with the analytical batch. The percent difference (PD) between the measured value and the certified range was calculated to measure data quality in terms of accuracy. 08-0130 – 1 out of 25 exceedences noted. Comments – All percent differences were within the laboratory control limits (<30 % difference plus variance) except for PCB 209. The chromatography and calculations were reviewed. The analyst noted that interference from the matrix was the cause for the elevated PCB 209 result. The concentration has been qualified with an “ME” to indicate that the result is an estimate. The percent difference exceedence was qualified with an “N”. No corrective action was taken. PCB 209 was not detected in any field samples, and therefore the SRM exceedences due to over-recovery had no impact on the data quality. Accuracy for PCB 209 was demonstrated in all other quality controls.

Pesticide/PCB – Sediment QA/QC Summary
Batch 08-0130

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0130 – All surrogate percent recoveries for this batch were within the laboratory control limits (30-150%)

Comments – None.

CALIBRATIONS: The GC/ECD was calibrated with a 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The PD between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Independent Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0130 – No exceedences noted.

Comments – All calibration criteria have been met.



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-012	HAC-013	HAC-014	HAC-015	HAC-016
Battelle ID	Q2888-P	Q2889-P	Q2890-P	Q2891-P	Q2892-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	05/02/08	05/02/08	05/02/08	05/02/08	05/02/08
Extraction Date	05/27/08	05/27/08	05/27/08	05/27/08	05/27/08
Analysis Date	06/03/08	06/03/08	06/03/08	06/03/08	06/03/08
Analytical Instrument	ECD	ECD	ECD	ECD	ECD
% Moisture	59.18	58.14	59.81	59.83	59.34
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.27	12.70	12.59	12.31	12.50
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
4,4'-DDD	0.56	0.63	0.6	0.25 J	0.32 J
4,4'-DDE	0.3 J	0.35 J	0.31 J	0.19 J	0.24 J
4,4'-DDT	0.45	0.52	0.56	0.36 J	0.38 J
aldrin	1.73	0.39 U	0.4 U	0.41 U	0.4 U
a-chlordane	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
g-chlordane	0.41 U	0.4 U	0.4 U	0.41 U	0.4 U
Lindane	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
cis-nonachlor	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
trans-nonachlor	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
oxychlordane	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
dieldrin	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
endosulfan I	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
endosulfan II	0.31 J	0.32 J	0.39 J	0.2 J	0.2 J
endrin	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
heptachlor	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
heptachlor epoxide	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Hexachlorobenzene	0.41 U	0.39 U	0.2 J	0.13 J	0.1 J
methoxychlor	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Toxaphene	32.67 U	31.55 U	31.83 U	32.02 U	32.6 U
Cl2(8)	0.41 U	0.39 U	0.4 U	0.4 U	0.4 U
Cl3(18)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl3(28)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl4(44)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl4(49)	0.41 U	0.4 U	0.4 U	0.41 U	0.4 U
Cl4(52)	0.41 U	0.4 U	0.4 U	0.41 U	0.4 U
Cl4(66)	0.41 U	0.4 U	0.4 U	0.41 U	0.4 U
Cl5(87)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl5(101)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl5(105)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl5(118)	0.41 U	0.34 J	0.36 J	0.41 U	0.4 U
Cl6(128)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl6(138)	0.35 J	0.41	0.32 J	0.2 J	0.25 J
Cl6(153)	0.28 J	0.39	0.29 J	0.2 J	0.2 J
Cl7(170)	0.41 U	0.39 U	0.4 U	0.4 U	0.4 U
Cl7(180)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl7(183)	0.4 U	0.39 U	0.39 U	0.4 U	0.4 U
Cl7(184)	0.4 U	0.39 U	0.39 U	0.4 U	0.4 U
Cl7(187)	0.41 U	0.39 U	0.4 U	0.4 U	0.4 U
Cl8(195)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl9(206)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Cl10(209)	0.41 U	0.39 U	0.4 U	0.41 U	0.4 U
Total PCB	14.38	14.02	13.94	13.86	13.7

Surrogate Recoveries (%)

Cl3(34)	56	55	62	54	58
Cl6(152)	68	69	74	66	70

U = analyte not-detected; ss-RL reported
J = analyte detected below RL
N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-017	HAC-019	HAC-020	HAC-021	HAC-022
Battelle ID	Q2893-P	Q2894-P	Q2895-P	Q2896-P	Q2897-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	05/02/08	04/30/08	04/30/08	04/30/08	05/01/08
Extraction Date	05/27/08	05/27/08	05/27/08	05/27/08	05/27/08
Analysis Date	06/04/08	06/04/08	06/04/08	06/04/08	06/04/08
Analytical Instrument	ECD	ECD	ECD	ECD	ECD
% Moisture	57.72	54.71	56.47	41.53	29.44
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.86	13.96	13.12	17.61	21.50
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
4,4'-DDD	0.32 J	0.29 J	0.3 J	0.12 J	0.21 J
4,4'-DDE	0.24 J	0.12 J	0.13 J	0.28 U	0.23 U
4,4'-DDT	0.35 J	0.36 U	0.3 J	0.28 U	0.23 U
aldrin	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
a-chlordane	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
g-chlordane	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Lindane	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
cis-nonachlor	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
trans-nonachlor	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
oxychlordane	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
dieldrin	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
endosulfan I	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
endosulfan II	0.21 J	0.36 U	0.22 J	0.28 U	0.23
endrin	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
heptachlor	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
heptachlor epoxide	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Hexachlorobenzene	0.13 J	0.36 U	0.12 J	0.28 U	0.23 U
methoxychlor	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Toxaphene	31.17 U	28.71 U	30.55 U	22.76 U	18.64 U
Cl2(8)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl3(18)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl3(28)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl4(44)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl4(49)	0.39 U	0.36 U	0.38 U	0.29 U	0.23 U
Cl4(52)	0.39 U	0.36 U	0.38 U	0.29 U	0.23 U
Cl4(66)	0.39 U	0.36 U	0.38 U	0.29 U	0.23 U
Cl5(87)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl5(101)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl5(105)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl5(118)	0.22 J	0.36 U	0.23 J	0.28 U	0.24 U
Cl6(128)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl6(138)	0.2 J	0.36 U	0.21 J	0.28 U	0.24 U
Cl6(153)	0.19 J	0.18 J	0.26 J	0.28 U	0.13 J
Cl7(170)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl7(180)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl7(183)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl7(184)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl7(187)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl8(195)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl9(206)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Cl10(209)	0.39 U	0.36 U	0.38 U	0.28 U	0.23 U
Total PCB	12.92	12.6	12.8	10.12	8.12

Surrogate Recoveries (%)

Cl3(34)	61	65	55	59	66
Cl6(152)	74	72	60	63	73

U = analyte not-detected; ss-RL r
J = analyte detected below RL
N = outside QC limits

Not Surrogate Corrected

Analyzed by Restucci Jr, Richard
7/21/2008

Main: S08-0130ECD-Master_128-Final_RL w Total-PCB.xls



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID Procedural Blank

Battelle ID	BL833PB-P
Sample Type	PB
Collection Date	05/27/08
Extraction Date	05/27/08
Analysis Date	06/02/08
Analytical Instrument	ECD
% Moisture	53.62
% Lipid	NA
Matrix	SEDIMENT
Sample Size	13.94
Size Unit-Basis	G_DRY
Units	UG/KG DRY

4,4'-DDD	0.36 U
4,4'-DDE	0.36 U
4,4'-DDT	0.36 U
aldrin	0.36 U
a-chlordane	0.36 U
g-chlordane	0.36 U
Lindane	0.36 U
cis-nonachlor	0.36 U
trans-nonachlor	0.36 U
oxychlordane	0.36 U
dieldrin	0.36 U
endosulfan I	0.36 U
endosulfan II	0.36 U
endrin	0.36 U
heptachlor	0.36 U
heptachlor epoxide	0.36 U
Hexachlorobenzene	0.36 U
methoxychlor	0.36 U
Toxaphene	28.75 U
Cl2(8)	0.36 U
Cl3(18)	0.36 U
Cl3(28)	0.36 U
Cl4(44)	0.36 U
Cl4(49)	0.36 U
Cl4(52)	0.36 U
Cl4(66)	0.36 U
Cl5(87)	0.36 U
Cl5(101)	0.36 U
Cl5(105)	0.36 U
Cl5(118)	0.36 U
Cl6(128)	0.36 U
Cl6(138)	0.36 U
Cl6(153)	0.36 U
Cl7(170)	0.36 U
Cl7(180)	0.36 U
Cl7(183)	0.36 U
Cl7(184)	0.36 U
Cl7(187)	0.36 U
Cl8(195)	0.36 U
Cl9(206)	0.36 U
Cl10(209)	0.36 U
Total PCB	12.96

Surrogate Recoveries (%)

Cl3(34)	71
Cl6(152)	76

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	080324-01: Sand, White Quartz		
Battelle ID	BL834LCS-P		
Sample Type	LCS		
Collection Date	05/27/08		
Extraction Date	05/27/08		
Analysis Date	06/03/08		
Analytical Instrument	ECD		
% Moisture	NA		
% Lipid	NA		
Matrix	SEDIMENT		
Sample Size	30.27		
Size Unit-Basis	G_DRY		
Units	UG/KG_DRY	Target % Recovery	Qualifier
4,4'-DDD	3.49	3.97	88
4,4'-DDE	3.33	3.97	84
4,4'-DDT	3.58	3.97	90
aldrin	3.02	3.97	76
a-chlordane	3.23	3.97	81
g-chlordane	3.26	3.97	82
Lindane	2.83	3.97	71
cis-nonachlor	3.34	3.97	84
trans-nonachlor	3.3	3.97	83
oxychlordane	3.25	3.98	82
dieldrin	3.51	3.97	88
endosulfan I	3.36	3.97	85
endosulfan II	3.03	3.97	76
endrin	3.3	3.97	83
heptachlor	2.98	3.97	75
heptachlor epoxide	3.32	3.97	84
Hexachlorobenzene	2.58	3.97	65
methoxychlor	3.93	3.97	99
Toxaphene	13.24 U		
Cl2(8)	2.39	3.98	60
Cl3(18)	2.83	3.98	71
Cl3(28)	2.48	3.97	62
Cl4(44)	3.1	3.97	78
Cl4(49)	3.2	3.98	80
Cl4(52)	3.1	3.96	78
Cl4(66)	3.13	3.97	79
Cl5(87)	3.35	3.93	85
Cl5(101)	3.14	3.97	79
Cl5(105)	3.4	3.97	86
Cl5(118)	3.42	3.97	86
Cl6(128)	3.38	3.99	85
Cl6(138)	3.35	3.97	84
Cl6(153)	3.22	3.97	81
Cl7(170)	3.62	3.98	91
Cl7(180)	3.52	3.98	88
Cl7(183)	3.57	3.98	90
Cl7(184)	3.31	3.98	83
Cl7(187)	3.31	3.98	83
Cl8(195)	3.41	3.98	86
Cl9(206)	3.35	3.98	84
Cl10(209)	3.2	3.97	81
Total PCB	114.7		

Surrogate Recoveries (%)

Cl3(34)	74
Cl6(152)	78

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	080328-01: Nist SRM 1944					
Battelle ID	BL835SRM-P					
Sample Type	SRM					
Collection Date	05/27/08					
Extraction Date	05/27/08					
Analysis Date	06/03/08					
Analytical Instrument	ECD					
% Moisture	1.3					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	2.05					
Size Unit-Basis	G_DRY					
Units	UG/KG_DRY	Certified Value	+/-	Passing %Difference	Actual %Difference	Qualifier
4,4'-DDD	2.43 U					
4,4'-DDE	69					
4,4'-DDT	120.6	119	11.00	39.24	1.3	
aldrin	2.44 U					
a-chlordane	18.12	16.51	0.83	35.03	9.8	
g-chlordane	17.35					
Lindane	5.23					
cis-nonachlor	4.36					
trans-nonachlor	9.68	8.2	0.51	36.22	18	
oxychlordane	2.44 U					
dieldrin	59.26					
endosulfan I	2.44 U					
endosulfan II	2.44 U					
endrin	2.44 U					
heptachlor	2.44 U					
heptachlor epoxide	2.44 U					
Hexachlorobenzene	6.47	6.03	0.35	35.8	7.3	
methoxychlor	2.44 U					
Toxaphene	195.51 U					
Cl2(8)	29.12	22.3	2.30	40.31	30.6	
Cl3(18)	57.15	51	2.60	35.1	12.1	
Cl3(28)	57.64	80.8	2.70	33.34	28.7	
Cl4(44)	43.66	60.2	2.00	33.32	27.5	
Cl4(49)	50.84	53	1.70	33.21	4.1	
Cl4(52)	70.94	79.4	2.00	32.52	10.7	
Cl4(66)	61.24	71.9	4.30	35.98	14.8	
Cl5(87)	32.1	29.9	4.30	44.38	7.4	
Cl5(101)	80.92	73.4	2.50	33.41	10.2	
Cl5(105)	22.65	24.5	1.10	34.49	7.6	
Cl5(118)	69.71	58	4.30	37.41	20.2	
Cl6(128)	9.02	8.47	0.28	33.31	6.5	
Cl6(138)	60.18	62.1	3.00	34.83	3.1	
Cl6(153)	76.63	74	2.90	33.92	3.6	
Cl7(170)	28.86 ME	22.6	1.40	36.19	27.7	
Cl7(180)	33.26	44.3	1.20	32.71	24.9	
Cl7(183)	9.3	12.19	0.57	34.68	23.7	
Cl7(184)	2.42 U					
Cl7(187)	20.28	25.1	1.00	33.98	19.2	
Cl8(195)	4.61	3.75	0.39	40.4	22.9	
Cl9(206)	9.2	9.21	0.51	35.54	0.1	
Cl10(209)	10.44 ME	6.81	0.33	34.85	53.3	N
Total PCB	1491.02					

Surrogate Recoveries (%)

Cl3(34)	48
Cl6(152)	73

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-013	HAC-013		
Battelle ID	Q2889-P	Q2889MS-P		
Sample Type	SA	MS		
Collection Date	05/02/08	5/2/2008		
Extraction Date	05/27/08	5/27/2008		
Analysis Date	06/03/08	6/3/2008		
Analytical Instrument	ECD	ECD		
% Moisture	58.14	57.98		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	12.70	6.3		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG DRY	UG/KG DRY	Target % Recovery	Qualifier
4,4'-DDD	0.63	17.39	19.06	88
4,4'-DDE	0.35 J	15.79	19.06	81
4,4'-DDT	0.52	17.49	19.06	89
aldrin	0.39 U	13.87	19.06	73
a-chlordane	0.39 U	15.87	19.06	83
g-chlordane	0.4 U	16.58	19.08	87
Lindane	0.39 U	12.99	19.06	68
cis-nonachlor	0.39 U	15.33	19.06	80
trans-nonachlor	0.39 U	15.95	19.07	84
oxychlordane	0.39 U	15.84	19.15	83
dieldrin	0.39 U	16.33	19.06	86
endosulfan I	0.39 U	14.04	19.06	74
endosulfan II	0.32 J	15.36	19.06	79
endrin	0.39 U	15.37	19.06	81
heptachlor	0.39 U	14.34	19.06	75
heptachlor epoxide	0.39 U	15.89	19.06	83
Hexachlorobenzene	0.39 U	11.8	19.08	62
methoxychlor	0.39 U	20	19.05	105
Toxaphene	31.55 U	63.62 U		
Cl2(8)	0.39 U	11	19.10	58
Cl3(18)	0.39 U	12.35	19.10	65
Cl3(28)	0.39 U	11.37	19.07	60
Cl4(44)	0.39 U	14.56	19.09	76
Cl4(49)	0.4 U	15.54	19.12	81
Cl4(52)	0.4 U	14.8	19.05	78
Cl4(66)	0.4 U	15.92	19.07	83
Cl5(87)	0.39 U	15.17	18.88	80
Cl5(101)	0.39 U	15.17	19.09	79
Cl5(105)	0.39 U	15.68	19.07	82
Cl5(118)	0.34 J	16.4	19.07	84
Cl6(128)	0.39 U	15.56	19.16	81
Cl6(138)	0.41	15.93	19.09	81
Cl6(153)	0.39	15.71	19.07	80
Cl7(170)	0.39 U	21.78	19.14	114
Cl7(180)	0.39 U	16.55	19.12	87
Cl7(183)	0.39 U	16.41	19.12	86
Cl7(184)	0.39 U	15.75	19.12	82
Cl7(187)	0.39 U	15.32	19.10	80
Cl8(195)	0.39 U	15.43	19.10	81
Cl9(206)	0.39 U	14.4	19.10	75
Cl10(209)	0.39 U	14.62	19.07	77
Total PCB	14.02	545.1		

Surrogate Recoveries (%)

Cl3(34)	55	72
Cl6(152)	69	76

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID HAC-013

Battelle ID Q2889MSD-P
 Sample Type MSD
 Collection Date 5/2/2008
 Extraction Date 5/27/2008
 Analysis Date 6/3/2008
 Analytical Instrument ECD
 % Moisture 58.07
 % Lipid NA
 Matrix SEDIMENT
 Sample Size 6.61
 Size Unit-Basis G_DRY
 Units UG/KG DRY

	UG/KG DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
4,4'-DDD	15.35	18.16	81		8.3	
4,4'-DDE	14.14	18.17	76		6.4	
4,4'-DDT	16.23	18.16	87		2.3	
aldrin	11.65	18.16	64		13.1	
a-chlordane	14.06	18.17	77		7.5	
g-chlordane	14.57	18.18	80		8.4	
Lindane	10.74	18.17	59		14.2	
cis-nonachlor	13.89	18.17	76		5.1	
trans-nonachlor	14.17	18.18	78		7.4	
oxychlordane	13.55	18.25	74		11.5	
dieldrin	14.29	18.16	79		8.5	
endosulfan I	12.53	18.17	69		7.0	
endosulfan II	13.18	18.17	71		10.7	
endrin	13.67	18.16	75		7.7	
heptachlor	11.86	18.16	65		14.3	
heptachlor epoxide	13.65	18.17	75		10.1	
Hexachlorobenzene	10.49	18.18	58		6.7	
methoxychlor	17.36	18.16	96		9.0	
Toxaphene	60.64	U				
Cl2(8)	9.18	18.21	50		14.8	
Cl3(18)	10.21	18.21	56		14.9	
Cl3(28)	9.57	18.17	53		12.4	
Cl4(44)	13.13	18.19	72		5.4	
Cl4(49)	13.55	18.23	74		9.0	
Cl4(52)	12.61	18.15	69		12.2	
Cl4(66)	13.95	18.17	77		7.5	
Cl5(87)	13.75	18.00	76		5.1	
Cl5(101)	13.69	18.19	75		5.2	
Cl5(105)	13.8	18.17	76		7.6	
Cl5(118)	14.5	18.17	78		7.4	
Cl6(128)	14.36	18.26	79		2.5	
Cl6(138)	15.1	18.19	81		0.0	
Cl6(153)	13.94	18.17	75		6.5	
Cl7(170)	18.85	18.25	103		10.1	
Cl7(180)	14.26	18.23	78		10.9	
Cl7(183)	15.01	18.23	82		4.8	
Cl7(184)	14.03	18.23	77		6.3	
Cl7(187)	13.48	18.21	74		7.8	
Cl8(195)	13.53	18.21	74		9.0	
Cl9(206)	12.63	18.21	69		8.3	
Cl10(209)	13.3	18.17	73		5.3	
Total PCB	480.18					

Surrogate Recoveries (%)

Cl3(34)	62
Cl6(152)	70

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-014	HAC-014		
Battelle ID	Q2890-P	Q2890DUP-P		
Sample Type	SA	QADU		
Collection Date	05/02/08	5/2/2008		
Extraction Date	05/27/08	5/27/2008		
Analysis Date	06/03/08	6/3/2008		
Analytical Instrument	ECD	ECD		
% Moisture	59.81	59.59		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	12.59	12.28		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	RPD	Qualifier
4,4'-DDD	0.6	0.48	22.2	
4,4'-DDE	0.31 J	0.31 J	NA	
4,4'-DDT	0.56	0.48	15.4	
aldrin	0.4 U	0.41 U	NA	
a-chlordane	0.4 U	0.41 U	NA	
g-chlordane	0.4 U	0.41 U	NA	
Lindane	0.4 U	0.41 U	NA	
cis-nonachlor	0.4 U	0.41 U	NA	
trans-nonachlor	0.4 U	0.41 U	NA	
oxychlordane	0.4 U	0.41 U	NA	
dieldrin	0.4 U	0.41 U	NA	
endosulfan I	0.4 U	0.41 U	NA	
endosulfan II	0.39 J	0.32 J	NA	
endrin	0.4 U	0.41 U	NA	
heptachlor	0.4 U	0.41 U	NA	
heptachlor epoxide	0.4 U	0.41 U	NA	
Hexachlorobenzene	0.2 J	0.16 J	NA	
methoxychlor	0.4 U	0.41 U	NA	
Toxaphene	31.83 U	32.63 U	NA	
Cl2(8)	0.4 U	0.41 U	NA	
Cl3(18)	0.4 U	0.41 U	NA	
Cl3(28)	0.4 U	0.41 U	NA	
Cl4(44)	0.4 U	0.41 U	NA	
Cl4(49)	0.4 U	0.41 U	NA	
Cl4(52)	0.4 U	0.41 U	NA	
Cl4(66)	0.4 U	0.41 U	NA	
Cl5(87)	0.4 U	0.41 U	NA	
Cl5(101)	0.4 U	0.41 U	NA	
Cl5(105)	0.4 U	0.41 U	NA	
Cl5(118)	0.36 J	0.41 U	NA	
Cl6(128)	0.4 U	0.41 U	NA	
Cl6(138)	0.32 J	0.28 J	NA	
Cl6(153)	0.29 J	0.3 J	NA	
Cl7(170)	0.4 U	0.41 U	NA	
Cl7(180)	0.4 U	0.41 U	NA	
Cl7(183)	0.39 U	0.4 U	NA	
Cl7(184)	0.39 U	0.4 U	NA	
Cl7(187)	0.4 U	0.41 U	NA	
Cl8(195)	0.4 U	0.41 U	NA	
Cl9(206)	0.4 U	0.41 U	NA	
Cl10(209)	0.4 U	0.41 U	NA	
Total PCB	13.94	14.28		

Surrogate Recoveries (%)

Cl3(34)	62	57
Cl6(152)	74	68

U = analyte not-detected; ss-RL reported
 J = analyte detected below RL
 N = outside QC limits

Pesticide/PCB – Rinsate Blank QA/QC Summary

Batch 08-0120

PROJECT: USACE – New England District; Searsport Rinsate Blank
PARAMETER: Pesticide/PCB
LABORATORY: Battelle, Duxbury, MA
MATRIX: Rinsate Blank
SAMPLE CUSTODY: Two Rinsate blank samples, one from a vibracore and the other from sediment grab, were collected on 5/1/2008 and 5/2/2008, respectively. They were delivered to the Chemistry Sample Custodian on 5/6/2008. Upon arrival the cooler temperature was recorded at 4.0°C. The samples were received in good condition and no custody issues were noted. They were logged into Battelle LIMS to receive unique IDs. The rinsate blanks were stored in refrigerator at 4°C until sample preparation could begin. However, during storage one sample Q2812 (sediment grab rinsate) broke. The entire sample was lost.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	Detection Limits (ng/L)
PCB/Pest	General NS&T	<5xMDL	30-150% Recovery	50-120% Recovery	MDL: 0.35 – 0.94 RL: 1.25 Toxaphene: 100.2

METHOD: The rinsate blank sample was analyzed to ensure field collection methods were free of contamination. Approximately 1 L of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. The extracts were then concentrated, fortified with internal standard (IS) and split for the required analysis. The split extract for PCB/pesticide analysis was solvent exchanged into hexane, and analyzed using gas chromatography/electron capture detection (GC/ECD), following general NS&T methods. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: The rinsate blank sample was extracted within 7 days of sample collection and analyzed within 40 days of extraction.

<u>Batch</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0120	5/8/2008	6/16/2008

Pesticide/PCB – Rinsate Blank QA/QC Summary

Batch 08-0120

BLANK:	A procedural blank (PB) was prepared with the analytical batch. Blanks are analyzed to ensure the sample extraction and analysis methods were free of contamination. 08-0120 – No exceedences noted. Comments – No target analytes were detected in the procedural blank.
LABORATORY CONTROL SAMPLE:	A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. 08-0120 – No exceedences noted. Comments – All percent recoveries of spiked target analytes were within the laboratory control limit (50-120%).
SURROGATES:	Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency). 08-0120 – No exceedences noted. Comments – Percent recoveries for all surrogate compounds were within the laboratory control limits (30 – 150% recovery).
CALIBRATIONS:	The GC/ECD was calibrated with a minimum of 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The PD between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Independent Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%. 08-0120 – No calibration exceedences noted. Comments - None



Project Client: USACE - North Atlantic Division
Project Name: Searsport Rinsate Blank Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-011
Battelle ID	Q2811-P
Sample Type	SA
Collection Date	05/01/08
Extraction Date	05/08/08
Analysis Date	06/16/08
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	NG/L LIQUID

4,4'-DDD	1.25 U
4,4'-DDE	1.26 U
4,4'-DDT	1.25 U
aldrin	1.25 U
a-chlordane	1.25 U
g-chlordane	1.26 U
Lindane	1.25 U
cis-nonachlor	1.25 U
trans-nonachlor	1.25 U
oxychlordane	1.25 U
dieldrin	1.25 U
endosulfan I	1.25 U
endosulfan II	1.25 U
endrin	1.25 U
heptachlor	1.25 U
heptachlor epoxide	1.25 U
Hexachlorobenzene	1.25 U
methoxychlor	1.25 U
Toxaphene	100.2 U
Cl2(8)	1.25 U
Cl3(18)	1.25 U
Cl3(28)	1.25 U
Cl4(44)	1.25 U
Cl4(49)	1.26 U
Cl4(52)	1.26 U
Cl4(66)	1.26 U
Cl5(87)	1.25 U
Cl5(101)	1.25 U
Cl5(105)	1.25 U
Cl5(118)	1.27 U
Cl6(128)	1.25 U
Cl6(138)	1.27 U
Cl6(153)	1.25 U
Cl7(170)	1.25 U
Cl7(180)	1.25 U
Cl7(183)	1.24 U
Cl7(184)	1.24 U
Cl7(187)	1.25 U
Cl8(195)	1.25 U
Cl9(206)	1.25 U
Cl10(209)	1.25 U
Total PCB	45.12

Surrogate Recoveries (%)

Cl3(34)	63
Cl6(152)	70



Project Client: USACE - North Atlantic Division
Project Name: Searsport Rinsate Blank Analysis
Project Number: G606441-DUXCHEM

Client ID: _____ Procedural Blank

Battelle ID	BL793PB-P
Sample Type	PB
Collection Date	05/08/08
Extraction Date	05/08/08
Analysis Date	06/16/08
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	NG/L LIQUID

4,4'-DDD	1.25 U
4,4'-DDE	1.26 U
4,4'-DDT	1.25 U
aldrin	1.25 U
a-chlordane	1.25 U
g-chlordane	1.26 U
Lindane	1.25 U
cis-nonachlor	1.25 U
trans-nonachlor	1.25 U
oxychlordane	1.25 U
dieldrin	1.25 U
endosulfan I	1.25 U
endosulfan II	1.25 U
endrin	1.25 U
heptachlor	1.25 U
heptachlor epoxide	1.25 U
Hexachlorobenzene	1.25 U
methoxychlor	1.25 U
Toxaphene	100.2 U
Cl2(8)	1.25 U
Cl3(18)	1.25 U
Cl3(28)	1.25 U
Cl4(44)	1.25 U
Cl4(49)	1.26 U
Cl4(52)	1.26 U
Cl4(66)	1.26 U
Cl5(87)	1.25 U
Cl5(101)	1.25 U
Cl5(105)	1.25 U
Cl5(118)	1.27 U
Cl6(128)	1.25 U
Cl6(138)	1.27 U
Cl6(153)	1.25 U
Cl7(170)	1.25 U
Cl7(180)	1.25 U
Cl7(183)	1.24 U
Cl7(184)	1.24 U
Cl7(187)	1.25 U
Cl8(195)	1.25 U
Cl9(206)	1.25 U
Cl10(209)	1.25 U
Total PCB	45.12

Surrogate Recoveries (%)

Cl3(34)	62
Cl6(152)	67



Project Client: USACE - North Atlantic Division
Project Name: Searsport Rinsate Blank Analysis
Project Number: G606441-DUXCHEM

Client ID	Laboratory Control				
	Sample				
Battelle ID	BL794LCS-P				
Sample Type	LCS				
Collection Date	05/08/08				
Extraction Date	05/08/08				
Analysis Date	06/16/08				
Analytical Instrument	ECD				
% Moisture	NA				
% Lipid	NA				
Matrix	WATER				
Sample Size	1.00				
Size Unit-Basis	L_LIQUID				
Units	NG/L_LIQUID		Target	% Recovery	Qualifier
4,4'-DDD	26.9		30.02	90	
4,4'-DDE	25.3		30.02	84	
4,4'-DDT	28.05		30.01	93	
aldrin	21.16		30.01	71	
a-chlordane	25.99		30.02	87	
g-chlordane	26.65		30.05	89	
Lindane	24.12		30.02	80	
cis-nonachlor	25.12		30.02	84	
trans-nonachlor	26.76		30.04	89	
oxychlordane	25.84		30.16	86	
dieldrin	25.2		30.02	84	
endosulfan I	22.75		30.02	76	
endosulfan II	21.89		30.02	73	
endrin	24.06		30.01	80	
heptachlor	22.48		30.02	75	
heptachlor epoxide	26.79		30.03	89	
Hexachlorobenzene	19.15		30.05	64	
methoxychlor	30.5		30.01	102	
Toxaphene	100.2	U			
Cl2(8)	19.49		30.09	65	
Cl3(18)	21.87		30.09	73	
Cl3(28)	20.68		30.03	69	
Cl4(44)	24.23		30.06	81	
Cl4(49)	24.59		30.12	82	
Cl4(52)	23.56		30.00	79	
Cl4(66)	26.05		30.03	87	
Cl5(87)	24.37		29.74	82	
Cl5(101)	25.64		30.06	85	
Cl5(105)	25.95		30.03	86	
Cl5(118)	27.55		30.03	92	
Cl6(128)	26.59		30.18	88	
Cl6(138)	25.85		30.06	86	
Cl6(153)	26.48		30.03	88	
Cl7(170)	28.64		30.15	95	
Cl7(180)	27.88		30.12	93	
Cl7(183)	27.71		30.12	92	
Cl7(184)	27.04		30.12	90	
Cl7(187)	26.07		30.09	87	
Cl8(195)	27.28		30.09	91	
Cl9(206)	26.92		30.09	89	
Cl10(209)	26.11		30.03	87	
Total PCB	913.68				

Surrogate Recoveries (%)

Cl3(34)	69
Cl6(152)	75

Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No. See checklists for individual parameters.
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No. See checklists for individual parameters.
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	Yes
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	Yes
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	NA
22. Were the test-specific age requirements met for each test species?	NA
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	NA
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	NA
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	NA

Table II-3: Quality Control Summary for Analyses of Pesticides and PCB in Sediment and Rinsate Blank Samples

Battelle Duxbury batches 08-0120 (Rinsate Blank) and 08-0130 (Sediments)

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample $r^2 \geq 0.995$	Yes		In Data Package
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at lab
Calibration Verification (Second Source)	Once, after initial calibration (<20%D)	Yes		In Data Package
Continuing Calibration	Every 24 hours ($\pm 20\%$ D)	Yes		In Data Package
Standard Reference Materials	$\pm 30\%$ PD plus variance	No	PCB 209 was recovered high and outside criteria in batch 08-0130.	In Data Package
Method Blank	No target analytes $> 5 \times$ MDL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

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

PAH Data

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PAH – SEDIMENT QA/QC SUMMARY

Batch 08-0150

PROJECT: USACE – New England District; Searsport Sediment Analysis
PARAMETER: PAH
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment cores for this project were composited on 4/30/2008, 5/1/2008, and 5/2/2008. The composites were hand delivered to the Chemistry Sample Custodian on 5/15/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. Composite sediment samples were stored in the walk-in freezer until sample preparation could begin. Samples were originally extracted as batch 08-0130. However, due to failures in some QC samples, the sediments were re-extracted for PAH compounds as batch 08-0150.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	SRM Percent Difference	Sample Replicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
PAH	General NS&T	<5xMDL	30-150% Recovery	50-120% Recovery	50-120% Recovery (analyte conc. in MS must be >5x background)	Average PD < 30% (plus 95% variance) (for analytes > 5 x MDL)	> 30% RPD (analytes must be > 10x MDL to be used for data quality assessment)	MDL: 0.15 – 0.57 RL: 0.74 – 1.47

METHOD: Sediment samples were extracted for PAH following general NS&T methods. Approximately 30 g of sediment was spiked with surrogates and extracted three times with dichloromethane using shaker table techniques. The combined extract was dried over anhydrous sodium sulfate, concentrated, processed through alumina cleanup column, concentrated, and fortified with internal standards (IS). Extracts intended for PAH analysis were analyzed using gas chromatography/mass spectrometry (GC/MS) operating in the selected ion monitoring (SIM) mode, following general NS&T methods. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Frozen sediment samples were prepared for analysis in one analytical batch and were extracted within one year of sample collection. All extracts were analyzed within 40 days of extraction.

<u>Batch</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0150	6/17/2008	6/25/2008 – 6/26/2008

PAH – SEDIMENT QA/QC SUMMARY

Batch 08-0150

BLANK:	A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination. 08-0150 – No exceedences noted. Comments– No target PAH were detected in the PB.
LABORATORY CONTROL SAMPLE:	A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. 08-0150 – One exceedence noted. Comments – All target analytes were recovered within the laboratory control limits (50-120%), except for naphthalene. This compound was under-recovered at 48%. Chromatography and calculations were reviewed. No discrepancies were found. Naphthalene data maybe biased low in field samples. The exceedence was qualified with an “N”.
MATRIX SPIKE/MATRIX SPIKE DUPLICATE:	A matrix spike (MS) and matrix spike duplicate sample (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries were calculated to measure the data quality in terms of precision. 08-0150 – 2 percent recovery exceedences noted. No RPD exceedences noted. Comments – All target analyte were recovered within the laboratory control limits (50-120%), except for naphthalene. This compound was under-recovered in both the MS and MSD (background sample HAC-012) at 45%, and 47%, respectively. Chromatography and calculations were reviewed. No discrepancies were found. Naphthalene data maybe biased low in the field samples. The exceedence was qualified with an “N”. The RPDs between percent recoveries were all within the laboratory control limits (<30% RPD).
REPLICATES:	A laboratory replicate (duplicate) sample was prepared with each analytical batch. The RPD between duplicate analyses for each target analyte is calculated to measure data quality in terms of precision. 08-0150 – No exceedences noted. Comments – The RPDs between duplicate analyses of all target analytes were within the laboratory control limits (<30% RPD).
SRM:	A standard reference material (NIST SRM 1944) was prepared with the analytical batch. The percent difference (PD) between the measured value and the certified range was calculated to measure data quality in terms of accuracy. 08-0150 – One exceedence noted. Comments – Benzo(a)pyrene was under recovered at 43.8% difference (passing criteria is 33.02% difference). Benzo(a)pyrene results in the field samples may be biased low.

PAH – SEDIMENT QA/QC SUMMARY

Batch 08-0150

SURROGATES: Four surrogate compounds were added prior to extraction, including naphthalene-d8, acenaphthene-d10, phenanthrene-d10, and benzo(a)pyrene-d12. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0150 – No exceedences noted.

Comments – All surrogate percent recoveries were within the laboratory control limits (30-150%).

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 5 level curve. The RSD between response factors for the individual target analytes must be $\leq 25\%$. Each batch of samples analyzed is bracketed by a continuing calibration verification sample (CCV), run at a frequency of minimally every 24 hours. The PD between the initial calibration RF and the CCV should be $\leq 25\%$ for individual analytes, with a mean PD $\leq 15\%$. Additionally, an independent calibration check sample (ICC) is run immediately after each initial calibration. The percent difference between the ICC and the initial calibration should be $\leq 25\%$.

08-0150 – No initial calibration exceedences noted.

No ICC exceedences noted.

No CCV exceedences noted.

Comments – All calibration criteria have been met.



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-012	HAC-013	HAC-014	HAC-015	HAC-016
Battelle ID	Q2888-P1	Q2889-P1	Q2890-P1	Q2891-P1	Q2892-P1
Sample Type	SA	SA	SA	SA	SA
Collection Date	05/02/08	05/02/08	05/02/08	05/02/08	05/02/08
Extraction Date	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08
Analysis Date	06/25/08	06/25/08	06/25/08	06/25/08	06/26/08
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	59.18	58.14	59.81	59.83	59.34
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.12	12.84	12.08	12.02	12.60
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	10.66	11.12	12.38	6.28	6.63
Acenaphthylene	23.38	24.68	23.87	14.12	14.7
Acenaphthene	4.02	4.19	4.69	2.42	2.47
Fluorene	7.7	7.85	8.56	4.53	4.52
Anthracene	22.93	22.99	23.24	12.69	12.93
Phenanthrene	79.11	80.78	79.36	46.42	47.58
Fluoranthene	172.09	177.95	173.59	104.52	108.07
Pyrene	158.29	164.93	161.85	93.85	97.18
Benzo(a)anthracene	68.9	70.48	70.55	40.23	41
Chrysene	82.3	86.62	87.54	51.3	51.39
Benzo(b)fluoranthene	88.95	94	92.17	54.61	55.13
Benzo(k)fluoranthene	86.21	95.98	89.47	55.8	56.42
Benzo(a)pyrene	91.75	96.94	93.14	55.58	56.22
Indeno(1,2,3-cd)pyrene	81.69	87.13	83.19	52.12	52.98
Dibenz(a,h)anthracene	17.69	18.5	18.25	10.98	11.2
Benzo(g,h,i)perylene	75.56	80.52	76.86	47.89	48.27

Surrogate Recoveries (%)

Naphthalene-d8	52	56	58	52	51
Acenaphthene-d10	73	79	80	78	73
Phenanthrene-d10	86	92	92	94	86
Benzo(a)pyrene-d12	109	120	118	120	109

Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-017	HAC-019	HAC-020	HAC-021	HAC-022
Battelle ID	Q2893-P1	Q2894-P1	Q2895-P1	Q2896-P1	Q2897-P1
Sample Type	SA	SA	SA	SA	SA
Collection Date	05/02/08	04/30/08	04/30/08	04/30/08	05/01/08
Extraction Date	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08
Analysis Date	06/26/08	06/26/08	06/26/08	06/26/08	06/26/08
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	57.72	54.71	56.47	41.53	29.44
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.84	13.88	13.11	17.99	21.32
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	6.55	10.08	17.66	5.06	23.57
Acenaphthylene	14.11	11.72	16.12	4.12	8.71
Acenaphthene	2.33	2.5	6.68	1.19	7
Fluorene	4.5	5.45	11.21	2.59	12.27
Anthracene	12.55	13.14	29.83	5.23	20.6
Phenanthrene	46.26	45.42	69.24	16.93	48.41
Fluoranthene	103.58	87.46	114.65	26.62	71.62
Pyrene	93.82	89.64	143.83	32.03	113.71
Benzo(a)anthracene	39.45	39.49	61.2	14.07	35.87
Chrysene	49.62	47.19	83.63	16.24	50.2
Benzo(b)fluoranthene	52.77	46.12	69.08	15.75	41.84
Benzo(k)fluoranthene	55.33	45.9	71.62	14.58	39.1
Benzo(a)pyrene	54.51	47.59	69.75	15.08	37.17
Indeno(1,2,3-cd)pyrene	51.36	40.02	49.02	11.65	24.57
Dibenz(a,h)anthracene	10.72	9.73	13.18	3.34	7.52
Benzo(g,h,i)perylene	46.97	38.32	47.13	11.65	24.45

Surrogate Recoveries (%)

Naphthalene-d8	50	56	57	48	47
Acenaphthene-d10	70	76	78	60	67
Phenanthrene-d10	84	90	90	69	78
Benzo(a)pyrene-d12	106	112	115	83	99



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	Procedural Blank
Battelle ID	BL947PB-P
Sample Type	PB
Collection Date	06/17/08
Extraction Date	06/17/08
Analysis Date	06/25/08
Analytical Instrument	MS
% Moisture	53.62
% Lipid	NA
Matrix	SEDIMENT
Sample Size	13.93
Size Unit-Basis	G_DRY
Units	UG/KG_DRY
Naphthalene	0.74 U
Acenaphthylene	0.74 U
Acenaphthene	0.74 U
Fluorene	0.74 U
Anthracene	0.74 U
Phenanthrene	0.74 U
Fluoranthene	0.74 U
Pyrene	0.74 U
Benzo(a)anthracene	0.74 U
Chrysene	0.74 U
Benzo(b)fluoranthene	0.74 U
Benzo(k)fluoranthene	1.47 U
Benzo(a)pyrene	0.74 U
Indeno(1,2,3-cd)pyrene	0.74 U
Dibenz(a,h)anthracene	0.74 U
Benzo(g,h,i)perylene	0.74 U

Surrogate Recoveries (%)

Naphthalene-d8	58
Acenaphthene-d10	71
Phenanthrene-d10	88
Benzo(a)pyrene-d12	99



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID 061122-01: Sand

Battelle ID BL948LCS-P
 Sample Type LCS
 Collection Date 06/17/08
 Extraction Date 06/17/08
 Analysis Date 06/25/08
 Analytical Instrument MS
 % Moisture NA
 % Lipid NA
 Matrix SEDIMENT
 Sample Size 30.64
 Size Unit-Basis G_DRY
 Units UG/KG_DRY

	UG/KG_DRY	Target	% Recovery	Qualifier
Naphthalene	31.42	65.32	48	N
Acenaphthylene	33.07	65.30	51	
Acenaphthene	35.5	65.32	54	
Fluorene	36.88	65.30	56	
Anthracene	33.65	65.32	52	
Phenanthrene	40.45	65.31	62	
Fluoranthene	46.65	65.31	71	
Pyrene	43.6	65.29	67	
Benzo(a)anthracene	38.47	65.29	59	
Chrysene	40.18	65.30	62	
Benzo(b)fluoranthene	38.75	65.31	59	
Benzo(k)fluoranthene	41.95	65.31	64	
Benzo(a)pyrene	35.65	65.31	55	
Indeno(1,2,3-cd)pyrene	39.65	65.31	61	
Dibenz(a,h)anthracene	41.42	65.32	63	
Benzo(g,h,i)perylene	42.39	65.30	65	

Surrogate Recoveries (%)

Naphthalene-d8 59
 Acenaphthene-d10 62
 Phenanthrene-d10 70
 Benzo(a)pyrene-d12 71



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	080328-01: Nist SRM 1944					
Battelle ID	BL949SRM-P					
Sample Type	SRM					
Collection Date	06/17/08					
Extraction Date	06/17/08					
Analysis Date	06/25/08					
Analytical Instrument	MS					
% Moisture	1.3					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	1.38					
Size Unit-Basis	G_DRY	Certified		Passing	Actual	
Units	UG/KG_DRY	Value	+/-	%Difference	%Difference	Qualifier
Naphthalene	1233.42	1650	310.04	48.79	25.2	
Acenaphthylene	929.91					
Acenaphthene	276.01					
Fluorene	311.36					
Anthracene	1142.06	1770	329.93	48.64	35.5	
Phenanthrene	4109.65	5270	219.76	34.17	22	
Fluoranthene	7688.68	8920	320.23	33.59	13.8	
Pyrene	7729.36	9700	420.01	34.33	20.3	
Benzo(a)anthracene	3386.35	4720	109.98	32.33	28.3	
Chrysene	4280.03	5900	270.22	34.58	27.5	
Benzo(b)fluoranthene	2578.38	3870	419.90	40.85	33.4	
Benzo(k)fluoranthene	2645.66	4390	640.06	44.58	39.7	
Benzo(a)pyrene	2416.63	4300	129.86	33.02	43.8	N
Indeno(1,2,3-cd)pyrene	2172.48	2780	100.08	33.6	21.9	
Dibenz(a,h)anthracene	577.53	759	81.97	40.8	23.9	
Benzo(g,h,i)perylene	2093.97	2840	99.97	33.52	26.3	

Surrogate Recoveries (%)

Naphthalene-d8	56
Acenaphthene-d10	75
Phenanthrene-d10	84
Benzo(a)pyrene-d12	103

Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-012	HAC-012			
Battelle ID	Q2888-P1	Q2888MS-P			
Sample Type	SA	MS			
Collection Date	05/02/08	5/2/2008			
Extraction Date	06/17/08	6/17/2008			
Analysis Date	06/25/08	6/25/2008			
Analytical Instrument	MS	MS			
% Moisture	59.18	59.18			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	12.12	6.23			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	Target	% Recovery	Qualifier
Naphthalene	10.66	156.66	321.25	45	N
Acenaphthylene	23.38	216.71	321.17	60	
Acenaphthene	4.02	209.53	321.27	64	
Fluorene	7.7	234.02	321.14	70	
Anthracene	22.93	269.45	321.27	77	
Phenanthrene	79.11	321.38	321.20	75	
Fluoranthene	172.09	449.81	321.22	86	
Pyrene	158.29	432.99	321.12	86	
Benzo(a)anthracene	68.9	330.11	321.11	81	
Chrysene	82.3	326.74	321.14	76	
Benzo(b)fluoranthene	88.95	344.84	321.22	80	
Benzo(k)fluoranthene	86.21	352.7	321.22	83	
Benzo(a)pyrene	91.75	364.71	321.19	85	
Indeno(1,2,3-cd)pyrene	81.69	370.71	321.22	90	
Dibenz(a,h)anthracene	17.69	289.28	321.24	85	
Benzo(g,h,i)perylene	75.56	352.84	321.17	86	

Surrogate Recoveries (%)

Naphthalene-d8	52	53
Acenaphthene-d10	73	73
Phenanthrene-d10	86	88
Benzo(a)pyrene-d12	109	116

Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID HAC-012

Battelle ID Q2888MSD-P
Sample Type MSD
Collection Date 5/2/2008
Extraction Date 6/17/2008
Analysis Date 6/25/2008
Analytical Instrument MS
% Moisture 59.18
% Lipid NA
Matrix SEDIMENT
Sample Size 6.23
Size Unit-Basis G_DRY
Units UG/KG_DRY

	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Naphthalene	162.78	321.25	47	N	4.3
Acenaphthylene	223.75	321.17	62		3.3
Acenaphthene	216.49	321.27	66		3.1
Fluorene	240.46	321.14	72		2.8
Anthracene	271.3	321.27	77		0.0
Phenanthrene	323.32	321.20	76		1.3
Fluoranthene	445.43	321.22	85		1.2
Pyrene	428.24	321.12	84		2.4
Benzo(a)anthracene	324.51	321.11	80		1.2
Chrysene	324.25	321.14	75		1.3
Benzo(b)fluoranthene	336.37	321.22	77		3.8
Benzo(k)fluoranthene	344.75	321.22	80		3.7
Benzo(a)pyrene	358.13	321.19	83		2.4
Indeno(1,2,3-cd)pyrene	362.46	321.22	87		3.4
Dibenz(a,h)anthracene	285.44	321.24	83		2.4
Benzo(g,h,i)perylene	344.64	321.17	84		2.4

Surrogate Recoveries (%)

Naphthalene-d8 54
Acenaphthene-d10 74
Phenanthrene-d10 89
Benzo(a)pyrene-d12 114



Project Client: USACE - North Atlantic Division
Project Name: Searsport Sediment Sample Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-013	HAC-013		
Battelle ID	Q2889-P1	Q2889DUP-P		
Sample Type	SA	QADU		
Collection Date	05/02/08	5/2/2008		
Extraction Date	06/17/08	6/17/2008		
Analysis Date	06/25/08	6/25/2008		
Analytical Instrument	MS	MS		
% Moisture	58.14	58.14		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	12.84	12.62		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	RPD	Qualifier
Naphthalene	11.12	10.63	4.5	
Acenaphthylene	24.68	24.47	0.9	
Acenaphthene	4.19	4.15	1.0	
Fluorene	7.85	7.7	1.9	
Anthracene	22.99	22.57	1.8	
Phenanthrene	80.78	78.88	2.4	
Fluoranthene	177.95	176.27	0.9	
Pyrene	164.93	162.1	1.7	
Benzo(a)anthracene	70.48	68.94	2.2	
Chrysene	86.62	84.17	2.9	
Benzo(b)fluoranthene	94	92.16	2.0	
Benzo(k)fluoranthene	95.98	89.69	6.8	
Benzo(a)pyrene	96.94	95.48	1.5	
Indeno(1,2,3-cd)pyrene	87.13	85.44	2.0	
Dibenz(a,h)anthracene	18.5	18.12	2.1	
Benzo(g,h,i)perylene	80.52	78.12	3.0	

Surrogate Recoveries (%)

Naphthalene-d8	56	54
Acenaphthene-d10	79	79
Phenanthrene-d10	92	92
Benzo(a)pyrene-d12	120	118

PAH – Rinsate Blank QA/QC Summary

Batch 08-0120

PROJECT: USACE – New England District; Searsport Rinsate Blank
PARAMETER: PAH
LABORATORY: Battelle, Duxbury, MA
MATRIX: Rinsate Blank
SAMPLE CUSTODY: Two Rinsate blank samples, one from a vibracore and the other from sediment grab, were collected on 5/1/2008 and 5/2/2008, respectively. They were delivered to the Chemistry Sample Custodian on 5/6/2008. Upon arrival the cooler temperature was recorded at 4.0°C. The samples were received in good condition and no custody issues were noted. They were logged into Battelle LIMS to receive unique IDs. The rinsate blanks were stored in refrigerator at 4°C until sample preparation could begin. However, during storage one sample Q2812 (sediment grab rinsate) broke. The entire sample was lost.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	Detection Limits (ng/L)
PAH	General NS&T	<5xMDL	30-150% Recovery	50-120% Recovery	MDL: 0.59 – 1.95 RL:

METHOD: The rinsate blank sample was analyzed to ensure field collection methods were free of contamination. Approximately 1 L of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. The extracts were then concentrated, fortified with internal standard (IS) and split for the required analysis. The split extract for PAH was analyzed using gas chromatography/mass spectrometry (GC/MS) operating in the selected ion monitoring (SIM) mode, following general NS&T methods. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: The rinsate blank sample was extracted within 7 days of sample collection and analyzed within 40 days of extraction.

<u>Batch</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0120	5/8/2008	5/30/2008

PAH – Rinsate Blank QA/QC Summary

Batch 08-0120

BLANK:	A procedural blank (PB) was prepared with the analytical batch. Blanks are analyzed to ensure the sample extraction and analysis methods were free of contamination. 08-0120 – No exceedences noted. Comments – Naphthalene was detected in the PB at a concentration < 5x MDL and below reporting limit, and was “J” qualified. The compound was detected in the rinsate blank sample at a concentration greater than 10 times of the concentration in the PB. The sample data was not affected.
LABORATORY CONTROL SAMPLE:	A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. 08-0120 – No exceedences noted. Comments – All percent recoveries of spiked target analytes were within the laboratory control limit (50-120%).
SURROGATES:	Four surrogate compounds were added prior to extraction, including naphthalene-d8, acenaphthene-d10, phenanthrene-d10, and benzo(a)pyrene-d12. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency). 08-0120 – No exceedences noted. Comments – Percent recoveries for all surrogate compounds were within the laboratory control limits (30 – 150% recovery).
CALIBRATIONS:	The GC/MS is calibrated with a minimum of a 5 level curve. The RSD between response factors for the individual target analytes must be $\leq 25\%$. Each batch of samples analyzed is bracketed by a continuing calibration verification sample (CCV), run at a frequency of minimally every 24 hours. The PD between the initial calibration RF and the CCV should be $\leq 25\%$ for individual analytes, with a mean PD $\leq 15\%$. Additionally, an independent calibration check sample (ICC) is run immediately after each initial calibration. The percent difference between the ICC and the initial calibration should be $\leq 25\%$. 08-0120 – No calibration exceedences noted. Comments - None



Project Client: USACE - North Atlantic Division
Project Name: Searsport Rinsate Blank Analysis
Project Number: G606441-DUXCHEM

Client ID	HAC-011
Battelle ID	Q2811-P
Sample Type	SA
Collection Date	05/01/08
Extraction Date	05/08/08
Analysis Date	05/30/08
Analytical Instrument	MS
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	NG/L LIQUID

Naphthalene	24.66
Acenaphthylene	5.02 U
Acenaphthene	5.03 U
Fluorene	5.03 U
Anthracene	5.03 U
Phenanthrene	3.09 J
Fluoranthene	3.53 J
Pyrene	2.7 J
Benzo(a)anthracene	5.03 U
Chrysene	1.55 J
Benzo(b)fluoranthene	5.02 U
Benzo(k)fluoranthene	10.03 U
Benzo(a)pyrene	5.02 U
Indeno(1,2,3-cd)pyrene	5.03 U
Dibenz(a,h)anthracene	5.02 U
Benzo(g,h,i)perylene	5.02 U

Surrogate Recoveries (%)

Naphthalene-d8	71
Acenaphthene-d10	71
Phenanthrene-d10	81
Benzo(a)pyrene-d12	70



The Business of Innovation

Project Name: Searsport Rinsate Blank Analysis

Project Number: G606441-DUXCHEM

Client ID Procedural Blank

Battelle ID BL793PB-P

Sample Type	PB
-------------	----

Collection Date 05/08/08

Extraction Date 05/08/08

Analysis Date 05/30/08

Analytical Instrument MS

% Moisture	NA
------------	----

% Lipid	NA
---------	----

Matrix WATER

Sample Size	1.00
-------------	------

Sample Size	100
Size Unit-Basis	L_LIQUID

Units NG/L LIQUID

Naphthalene 2.2 J

Naphthalene	2.12 U
Acenaphthylene	5.02 U

Acenaphthylene	5.02 U
Acenaphthene	5.03 U

Fluorene	5.03 U
----------	--------

Anthracene	5.03	U
------------	------	---

Phenanthrene	5.02 U
--------------	--------

Fluoranthene 5.03 U

Pyrene	5.03 U
--------	--------

Benzo(a)anthracene	5.03 U
--------------------	--------

Chrysene 5.03 U

Benzo(b)fluoranthene	5.02 U
----------------------	--------

Benzo(k)fluoranthene 10.03 U

Benzo(a)pyrene	5.02 U
----------------	--------

Indeno(1,2,3-cd)pyrene	5.03 U
------------------------	--------

Dibenz(a,h)anthracene 5.02 U

Benzo(g,h,i)perylene	5.02 U
----------------------	--------

Surrogate Recoveries (%)

Naphthalene-d8 77

Naphthalene-d8	77
Acenaphthene-d10	76

Phenanthrene-d10	81
------------------	----

Benzo(a)pyrene-d12	67
--------------------	----



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: Searsport Rinsate Blank Analysis
Project Number: G606441-DUXCHEM

Laboratory Control				
Client ID	Sample			
Battelle ID	BL794LCS-P			
Sample Type	LCS			
Collection Date	05/08/08			
Extraction Date	05/08/08			
Analysis Date	05/30/08			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	NG/L_LIQUID	Target	% Recovery	Qualifier
Naphthalene	281.33	500.35	56	
Acenaphthylene	294.3	500.23	59	
Acenaphthene	297.5	500.38	59	
Fluorene	313.19	500.18	63	
Anthracene	308.84	500.38	62	
Phenanthrene	336.5	500.28	67	
Fluoranthene	351.49	500.30	70	
Pyrene	346.24	500.15	69	
Benzo(a)anthracene	323.01	500.13	65	
Chrysene	357.49	500.18	71	
Benzo(b)fluoranthene	311.58	500.30	62	
Benzo(k)fluoranthene	351.95	500.30	70	
Benzo(a)pyrene	316.17	500.25	63	
Indeno(1,2,3-cd)pyrene	286.72	500.30	57	
Dibenz(a,h)anthracene	314.43	500.33	63	
Benzo(g,h,i)perylene	319.75	500.23	64	

Surrogate Recoveries (%)

Naphthalene-d8	70
Acenaphthene-d10	68
Phenanthrene-d10	75
Benzo(a)pyrene-d12	67

Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) in Sediment and Rinsate Blank Samples
 Battelle Duxbury batches 08-0120 (Rinsate Blank) and 08-0150 (Sediments)
 Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<25 % RSD for each compound)	Yes		In Data Package
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		Retained at lab
Calibration Verification (Second Source)	Once, after initial calibration (<25%D)	Yes		In Data Package
Continuing Calibration	At the beginning of every 24 hour shift (<25%D for individual analytes)	Yes		In Data Package
Standard Reference Materials	+/- 30% plus variance	No	Benzo(a)pyrene was recovered below criteria in batch 08-0150.	In Data Package
Method Blank	No target analytes > 5 x MDL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 50 to 120%; RPD <30%)	No	Naphthalene was recovered slightly below criteria in the MS and MSD samples in batch 08-0150.	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package
Internal Standard Areas	Within 50 to 100% of internal standards in continuing calibration check	Yes		In Data Package

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

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Trace Metals Data

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Analytical Chemistry Data Package Inorganics Analysis

Project: Searsport Harbor

Analysis of Metals in Sediment and Rinsate Blank Water

Battelle Project No. 54137
CF No. 2891



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
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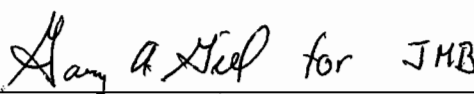
CERTIFICATION STATEMENT AND DATA RELEASE

Battelle Marine Sciences Laboratory is releasing the following data set:

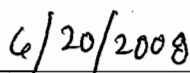
SEARSPORT HARBOR SEDIMENT CHEMISTRY

METALS IN SEDIMENT AND RINSATE BLANK

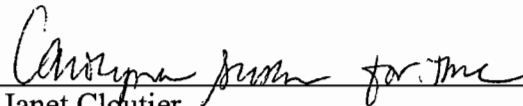
We certify that the data contained within this data set is authentic:



Jill M. Brandenberger
MSL Metals Chemistry Project Manager



Date



Janet Cloutier
MSL QA Officer



Date

BATTELLE MARINE SCIENCES LABORATORIES

Jill Brandenberger, Project Manager
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 Sequim, Washington 98382
 (360) 681-4564

USACE NED - Searsport Harbor

Metals in Sediment
 Samples Received on 05/15/08
 (concentrations in ug/g, dry weight)

Sponsor ID	MSL Code	Site Description	Collection	Percent									
			Date	Moisture	As	Cd	Cr	Cu	Ni	Pb	Zn	Hg	
			Instrument:	ICP-MS	ICP-MS	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	TD-CVAAS	
			CAS Number:	7440-38-2	7440-43-9	7440-47-3	7440-50-8	7440-02-0	7439-92-1	7440-66-6	7439-97-6		
		Achieved MDL	0.18	0.0044	0.020	0.058	0.023	0.25	0.21	0.0020			
		RLs (3.18 x MDL)	0.5	0.01	0.07	0.2	0.07	0.7	0.7	0.007			
HAC-012	2891-3	Reference Sediment BBDS	05/02/08	62.4	13.5	0.0860	87.4	19.6	37.6	26.4	114	0.278	
HAC-013	2891-4	Reference Sediment BBDS	05/02/08	60.6	14.2	0.0933	87.1	18.8	36.8	26.8	111	0.289	
HAC-014	2891-5	Reference Sediment BBDS	05/02/08	62.7	14.3	0.0887	87.0	19.5	37.7	26.6	114	0.261	
HAC-015	2891-6	Reference Sediment IDS	05/02/08	64.0	12.5	0.0723	82.0	17.5	36.9	22.5	106	0.136	
HAC-016	2891-7	Reference Sediment IDS	05/02/08	62.4	12.5	0.0747	85.4	17.9	36.8	22.5	109	0.150	
HAC-017	2891-8	Reference Sediment IDS	05/02/08	62.1	12.4	0.0784	84.3	17.7	36.3	23.3	107	0.150	
HAC-017	2891-8 DUP	Reference Sediment IDS	05/02/08	62.1	13.0	0.0720	84.9	17.8	36.9	23.7	108	0.156	
HAC-019	2891-9	Sediment from Station A,B,C	04/30/08	52.7	15.8	0.0913	81.8	17.0	36.9	18.3	97.7	0.129	
HAC-020	2891-10	Sediment from Station D,F	04/30/08	57.5	18.0	0.172	75.7	16.2	34.0	15.7	89.0	0.110	
HAC-021	2891-11	Sediment from Station E,G,H,I	04/30/08	42.5	14.9	0.118	63.3	15.8	30.5	11.4	65.0	0.0440	
HAC-022	2891-12	Sediment from Station J	05/01/08	30.2	17.0	0.159	47.4	8.76	19.8	10.1	48.4	0.0420	
Procedural Blank													
MB	Blank 053008				0.0277 J	0.01 U	0.07 U	0.2 U	0.07 U	0.7 U	0.7 U	--	
MB	Method Blank R1				--	--	--	--	--	--	--	0.007 U	
MB	Method Blank R2				--	--	--	--	--	--	--	0.007 U	
MB	Method Blank R3				--	--	--	--	--	--	--	0.007 U	
Laboratory Control Sample (Blank Spike)													
LCS	LCS 053008/ LCS (Hg)				27.1	26.4	25.6	25.4	24.4	25.7	26.5	0.279	
MB	Blank 053008/Method Blank (Hg)				0.0277 J	0.01 U	0.07 U	0.2 U	0.07 U	0.7 U	0.7 U	0.007 U	
	Spike Concentration				25	25	25	25	25	25	25	0.281	
	Percent Recovery				108%	106%	102%	101%	98%	103%	106%	99%	
MATRIX SPIKE RESULTS													
MS	2891-10 MS				67.4	2.14	124	65.5	78.7	60.5	185	0.664	
MSD	2891-10 MSD				64.4	1.99	119	62.1	76.4	57.4	177	0.594	
HAC-020	2891-10	Sediment from Station D,F	04/30/08	57.5	18.0	0.172	75.7	16.2	34.0	15.7	89.0	0.110	
	Spike Concentration, MS				47.2	1.98	47.2	47.2	47.2	47.2	94.3	0.552	
	Spike Concentration, MSD				44.9	1.82	44.9	44.9	44.9	44.9	89.8	0.482	
	Percent Recovery, MS				105%	99%	102%	105%	95%	95%	102%	100%	
	Percent Recovery, MSD				103%	100%	96%	102%	94%	93%	98%	100%	
	RPD				1%	1%	6%	2%	0%	2%	4%	0%	

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USACE NED - Searsport Harbor

Metals in Sediment
 Samples Received on 05/15/08
 (concentrations in ug/g, dry weight)

Sponsor ID	MSL Code	Site Description	Collection	Percent										
			Date	Moisture	As	Cd	Cr	Cu	Ni	Pb	Zn	Hg		
					Instrument:	ICP-MS	ICP-MS	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	TD-CVAAS
					CAS Number:	7440-38-2	7440-43-9	7440-47-3	7440-50-8	7440-02-0	7439-92-1	7440-66-6	7439-97-6	
					Achieved MDL	0.18	0.0044	0.020	0.058	0.023	0.25	0.21	0.0020	
					RLs (3.18 x MDL)	0.5	0.01	0.07	0.2	0.07	0.7	0.7	0.007	
<u>DUPLICATE PRECISION</u>														
HAC-017	2891-8	Reference Sediment IDS	05/02/08	62.1	12.4	0.0784	84.3	17.7	36.3	23.3	107	0.150		
HAC-017	2891-8 DUP	Reference Sediment IDS	05/02/08	62.1	13.0	0.0720	84.9	17.8	36.9	23.7	108	0.156		
MEAN						12.7	0.0752	84.6	17.7	36.6	23.5	108	0.153	
RPD						5%	9%	1%	1%	2%	2%	1%	4%	
<u>STANDARD REFERENCE MATERIAL</u>														
SRM	1944	053008			18.4	8.21	221	369	63.7	298	606	3.27		
certified or reference value						18.9	8.80	266	380	76.1	330	656	3.4	
range						±2.8	±1.4	±24	REF	±5.60	±48.0	±75	REF	
Percent Difference						3%	7%	17%	3%	16%	10%	8%	4%	

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USACE NED - Searsport Harbor
Metals in Rinsate Water

Samples Received on 05/07/08

Sponsor ID	MSL Code	Site Description	Collection Date	(concentrations in µg/L)							
				As	Cd	Cr	Cu	Ni	Pb	Zn	Hg
			Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	CVAF
			CAS Number:	7440-38-2	7440-43-9	7440-47-3	7440-50-8	7440-02-0	7439-92-1	7440-66-6	7439-97-6
			Achieved MDL	0.013	0.0053	0.11	0.029	0.010	0.0027	0.027	0.00015
			RLs (3.18 x MDL)	0.05	0.02	0.5	0.1	0.02	0.01	0.1	0.0005
HAC-011	2891-1	Vibracore Catcher rinsate blank	05/01/08	0.05 U	0.02 U	0.5 U	0.0354 J	0.227	0.0262	0.148 B	0.0005 U
HAC-018	2891-2	Sediment Grab rinsate blank	05/02/08	0.0448 J	0.02 U	0.305 J	0.0850 J	0.226	0.109	0.366	0.000736
<u>Procedural Blank</u>											
MB	RM Blank R2 or Method Blank1 (Hg)			0.05 U	0.02 U	0.5 U	0.1 U	0.02 U	0.01 U	0.0437 J	0.0005 U
MB	Method Blank2 (Hg)			--	--	--	--	--	--	--	0.0005 U
MB	Method Blank3 (Hg)			--	--	--	--	--	--	--	0.0005 U
<u>Laboratory Control Sample</u>											
LCS	TRM BS or OPR 051908run1 (Hg)			2.08	2.10	2.05	2.07	2.05	2.14	2.55	0.00533
LCS	OPR 051908run2 (Hg)			--	--	--	--	--	--	--	0.00533
MB	RM Blank R2 or Method Blank1 (Hg)			0.05 U	0.02 U	0.5 U	0.1 U	0.02 U	0.01 U	0.0437 J	0.0005 U
	Spiking Level			2	2	2	2	2	2	2	0.00496
	Percent Recovery			104%	105%	102%	104%	103%	107%	125%	108%
	Percent Recovery			NA	NA	NA	NA	NA	NA	NA	108%
<u>STANDARD REFERENCE MATERIAL</u>											
SRM	1640 or 1641d 051908 (Hg)			26.8	23.3	37.9	87.2	27.2	28.7	54.4	1567
	certified or reference value			26.67	22.79	38.6	85.2	27.4	27.89	53.2	1590
	range			±0.410	± 0.96	±1.6	± 1.2	± 0.8	± 0.14	± 1.1	±18
	Percent Difference			0%	2%	2%	2%	1%	3%	2%	1%

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**Searsport Harbor
Lab Qualifiers**

B	Analyte concentration found in the sample at a concentration $<5\times$ concentration in the procedural blank.
E	Concentration exceeds the range of the calibration curve for that particular analyte.
J	Analyte detected less than the laboratory achieved reporting limit; but above the MDL
U	Not detected above the MDL; laboratory RL reported
N	Value outside accuracy or precision criteria goals.
n	QC value outside the accuracy or precision data quality objective, but meets contingency criteria.

QAPP Data Quality Objectives:

MB	$< 5\times$ MDL or $< \text{RL}$
SRM	Percent Difference $\leq 25\%$ of certified values, if $> 10\times$ MDL
MS/LCS	75 –125 % Recovery
DUPS	MS/MSD $< 30\%$ between recoveries; sample duplicate $< 30\%$ between values

Acronyms:

CVAF	Cold Vapor Atomic Fluorescence
TD-CVAA	Thermal Decomposition, Amalgamation, and Cold Vapor Atomic Absorption
FIAS	Flow Injection Atomic Spectroscopy
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ICP-OES	Inductively Coupled Plasma Optical Emissions Spectroscopy

QA/QC NARRATIVE

PROJECT: Searsport Harbor
PARAMETER: Metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb), and zinc (Zn)
LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX: Sediment
SAMPLE CUSTODY AND PROCESSING: Six sediment samples for metals analyses were received at MSL on 05/15/08. All samples were received in good condition (i.e., no sample containers were broken). Samples were assigned a Battelle central file (CF) identification number (2891) and were entered into Battelle's laboratory information management system.

The following lists information on sample receipt and processing activities:

	Lab Sample IDs:	2891*3-12
	Description:	Sediment
Sample collection dates:	05/01/08, 05/02/08, and 04/30/08	
Laboratory arrival date:	05/15/08	
Cooler temp. on arrival:	4.4°C	
Digestion (HNO ₃ /HCl)	05/30/08	
CVAA Analysis Date (Hg)	06/10/08	
ICP-OES Analysis Date (Cr, Cu, Pb, Ni, Zn)	06/09/08	
ICP-MS Analysis Date (As, Cd)	06/05/08	

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	Range of Recovery	SRM Accuracy	Laboratory Duplicate Precision	RIM RL (µg/g)	Project MDL ⁽²⁾ (µg/g)	Project RL ⁽³⁾ (µg/g)
As	ICP-MS	75-125%	≤25% ⁽¹⁾	≤30%	0.4	0.18	0.5
Cd	ICP-MS	75-125%	≤25% ⁽¹⁾	≤30%	0.07	0.0044	0.01
Cr	ICP-OES	75-125%	≤25% ⁽¹⁾	≤30%	0.5	0.020	0.07
Cu	ICP-OES	75-125%	≤25% ⁽¹⁾	≤30%	0.5	0.058	0.2
Hg	TD-CVAAS	75-125%	≤25% ⁽¹⁾	≤30%	0.02	0.0020	0.007
Ni	ICP-OES	75-125%	≤25% ⁽¹⁾	≤30%	0.5	0.023	0.07
Pb	ICP-OES	75-125%	≤25% ⁽¹⁾	≤30%	0.5	0.25	0.7
Zn	ICP-OES	75-125%	≤25% ⁽¹⁾	≤30%	1	0.21	0.7

(1) Evaluated for analytes >10x the MDL

(2) Reported from the Annual Sediment Method Detection Limit (MDL) Study as determined on a dry weight basis using a minimum of seven replicates of quartz sand.

(3) Reporting Limit (RL) determined as 3.18 * achieved MDL and rounded to nearest 1, 2, 5, or 7 following EPA conventions.

METHODS: Sediment samples were analyzed for eight metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn). Samples were freeze-dried and homogenized using a ball-mill prior to digestion according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*. Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. An approximately 200-mg (dry weight) aliquot of each sample was combined with nitric and hydrochloric acids (aqua regia) in a Teflon bomb and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After heating and cooling, deionized

QA/QC NARRATIVE

METHODS:

water was added to the sediment digestate to achieve analysis volume. Digested samples were submitted for analysis by three methods.

Digested samples were analyzed for As and Cd using inductively coupled plasma-mass spectrometry (ICP-MS) according to Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 6020 with adaptations for the analysis of trace level metals in digested sediment and tissue samples.

Digested samples were analyzed for Cr, Cu, Ni, Pb, and Zn using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

Dried, homogenized sediment were analyzed for total Hg by using direct thermal decomposition atomic absorption spectrometry (TD-CVAAS) according to Battelle SOP MSL-I-034, *Total Mercury in Tissue and Sediment by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry*. This procedure is based on modification of EPA Method 7473.

HOLDING TIMES:

The target holding times are one year frozen for Hg and six months for all other metals. Target holding times were achieved.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved method detection limits (MDL). Achieved reporting limits (RL) were defined as 3.18*MDL and rounded to the nearest 1, 2, 5, or 7. Laboratory MDLs are determined annually and are based on a minimum of seven replicates of quartz sand. Data were evaluated and flagged in accordance with the following criteria:

- U Not detected above the MDL; laboratory RL reported
- J Analyte detected less than the laboratory achieved reporting limit; but above the MDL
- N QC value outside the accuracy or precision criteria goal
- n QC value outside the accuracy or precision data quality objective, but meets contingency criteria.
- B Analyte concentration found in the sample at a concentration < 5x the level found in the procedural blank.

METHOD BLANKS:

A minimum of one method blank was analyzed with each analytical batch of samples. Analytes concentrations in the method blank were not detected at a level greater than RL. The data are not blank corrected.

LABORATORY CONTROL SAMPLE ACCURACY: MATRIX SPIKE ACCURACY:

One laboratory control sample (LCS) was analyzed with the set of samples. The percent recoveries for the LCS were within the QC acceptance criterion of 75-125% recovery for all metals.

One sediment was selected for a matrix spike/matrix spike duplicate sample. The percent recoveries for the MS/MSD samples were within the QC acceptance criterion of 75-125% recovery for all metals.

DUPLICATE PRECISION:

Precision for this set of samples was assessed by the analysis of laboratory duplicates and matrix spike duplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values for the duplicates were within the QC criterion of ≤30% RPD. The RPD values for the MS/MSD samples were within the QC criterion of ≤20% RPD.

QA/QC NARRATIVE

**STANDARD
REFERENCE
MATERIAL
ACCURACY:**

SRM accuracy was expressed as the percent difference (PD) between the measured and certified or reference value for the SRM.

The SRM analyzed with this set of sediment samples was SRM 1944 New York/New Jersey Waterway Sediment. This SRM is certified for all metals except Cu and Hg. The reference values are reported for evaluation purposes. The percent differences from the certified or reference values were within the QC acceptance criterion of PD $\leq$ 25% for all metals.

QAI/QC NARRATIVE

PROJECT: Searsport Harbor

PARAMETER: Metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb), and zinc (Zn)

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Rinsate Blanks

SAMPLE CUSTODY AND PROCESSING: Two rinsate blank for metals analyses were received at MSL on 05/07/08. The samples were received in good condition (i.e., no sample containers were broken), assigned a Battelle central file (CF) identification number (2891), and entered into Battelle's laboratory information management system. The samples were received at MSL already preserved (per COC). Preservation vials were supplied to the field team and contained double distilled nitric acid to preserve each sample to a pH of < 2.0. A random check of the samples confirmed the pH was < 2.0.

The following lists information on sample receipt and processing activities:

	Lab Sample IDs:	2891*1-2
	Description:	Rinsate Blanks
Sample collection dates:		05/01/08 and 05/02/08
Laboratory arrival date:		05/07/08
Cooler temp. on arrival:		5.0°C
CVAF Analysis Date: (Hg)		05/20/08
ICP-MS Analysis Date: (As, Cd, Cr, Cu, Pb, Ni, Zn)		05/14/08

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Freshwater	MS Range of Recovery	SRM Percent Difference ¹	Replicate Precision	<u>NED Reporting Limits (ug/L)</u>	<u>Lab Detection Limits (ug/L)</u> ²	<u>Lab Reporting Limits (ug/L)</u> ³
Arsenic	ICP-MS	75-125%	≤25%	≤30%	1	0.013	0.05
Cadmium	ICP-MS	75-125%	≤25%	≤30%	1	0.0053	0.02
Chromium	ICP-MS	75-125%	≤25%	≤30%	1	0.11	0.5
Copper	ICP-MS	75-125%	≤25%	≤30%	0.6	0.029	0.1
Mercury	CVAF	75-125%	≤25%	≤30%	0.4	0.00015	0.0005
Nickel	ICP-MS	75-125%	≤25%	≤30%	1	0.010	0.02
Lead	ICP-MS	75-125%	≤25%	≤30%	1	0.0027	0.01
Zinc	ICP-MS	75-125%	≤25%	≤30%	1	0.027	0.1

¹ Evaluated for analytes >10x the MDL

² Reported from the Water Method Detection Limit (MDL) Study as determined using a minimum of seven replicates of spiked DI water.

³ Lab Reporting Limit (RL) determined as 3.18 * achieved MDL.

METHODS: The equipment rinsate blank was analyzed for arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn). The samples were submitted for analyses by two methods.

Samples were analyzed for total Hg by cold vapor atomic fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013; Total Mercury in Aqueous Samples by CVAF based on EPA Method 1631 Revision E*.

The samples were analyzed for all other metals by inductively coupled plasma-mass

QAI/QC NARRATIVE

spectrometry (ICP-MS) following Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP-MS*. Samples were acid solubilized prior to analysis by ICP-MS in accordance with the total recoverable metals (TRM) method in Battelle SOP MSL-I-022. The analysis guidelines for this procedure are adapted from USEPA Method 1638 *Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry*. The TRM methodology is adapted from USEPA Method 1640 - *Determination of Trace Elements in Ambient Waters by On-Line Chelation Preconcentration and Inductively Coupled Plasma-Mass Spectrometry*.

All data are reported in units of µg/L for each sample.

HOLDING TIMES:

Established holding times of 90 days for Hg and six months for trace metals were achieved.

DETECTION LIMITS:

Laboratory achieved detection limit are reported from the annual MDL study for freshwater. The reporting limits provided are determined as 3.18 times the laboratory achieved MDL and rounded to the nearest 1, 2, 5, or 7. Data were evaluated and flagged to the following criteria:

- U Not detected above the MDL; laboratory RL reported
- J Analyte detected less than the laboratory achieved reporting limit; but above the MDL
- N QC value outside the accuracy or precision criteria goal
- n QC value outside the accuracy or precision data quality objective, but meets contingency criteria.
- B Analyte concentration found in the sample at a concentration < 5x the level found in the procedural blank.

METHOD BLANKS:

A minimum of one method blank was analyzed with each batch of samples. Method blank concentrations were less than the RL for all metals. Samples were not blank corrected.

BLANK SPIKE /LABORATORY CONTROL SAMPLES:

A minimum of one laboratory control sample (LCS) or ongoing precision and recovery (OPR) sample was prepared and analyzed with this batch of samples. Percent recoveries for the LCS sample were within the QC acceptance criteria of 75% to 125% for all metals.

MATRIX SPIKE ACCURACY:

The sample matrix for rinsate blanks is deionized water; therefore the LCS sample serves as a matrix spike (MS).

STANDARD REFERENCE MATERIAL ACCURACY:

Two standard reference materials were analyzed with this batch of samples. SRM 1641d for Hg and SRM 1640 for metals analyzed by ICP-MS. Accuracy for SRMs was expressed as the percent difference (PD) between the measured and certified values.

One replicate of SRM 1641d for Hg was analyzed with this batch of samples. The percent difference for the SRM recovery was 1% and within the QC acceptance criterion of ± 25%.

One replicate of SRM 1640 was analyzed with this batch of samples. The percent differences were within the QC acceptance criterion of ± 25% difference for all metal.

Battelle Marine Science Laboratory

Method Detection Limit Study Summary

Date: 6/18/2008

MATRIX: QUARTZ SAND

PREPARATION METHOD: Aqua Regia

UNITS: µg/g dry weight

	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
Instrument:	ICP-MS	ICP-MS	ICP-OES	ICP-OES	TD-CVAAS	ICP-OES	ICP-OES	ICP-OES
Analysis Date:	4/29/2008	4/29/2008	5/27/2008	5/27/2008	3/3/2008	5/27/2008	5/27/2008	5/27/2008
CAS Code:	7440-38-2	7440-43-9	7440-47-3	7440-50-8	7439-97-6	7440-02-0	7439-92-1	7440-66-6
MDL 1	0.096	0.0227	0.115	0.134	0.0256	0.0952	1.12	1.10
MDL 2	0.196	0.0234	0.122	0.078	0.0266	0.112	1.02	1.09
MDL 3	0.198	0.0261	0.116	0.127	0.0268	0.0948	0.961	1.12
MDL 4	0.160	0.0220	0.109	0.137	0.0260	0.116	0.939	1.10
MDL 5	0.079	0.0234	0.120	0.113	0.0262	0.0991	1.01	1.18
MDL 6	0.113	0.0215	0.104	0.121	0.0271	0.102	1.05	1.05
MDL 7	0.214	0.0226	0.106	0.122	0.0272	0.107	0.967	0.970
MDL 8	0.241	0.0217	0.109	0.102	0.0254	0.100	0.840	--
MEAN	0.162	0.0229	0.113	0.117	0.0264	0.103	0.987	1.09
STDEV	0.0598	0.00148	0.00652	0.0192	0.00067	0.00783	0.0820	0.065
student-t value	2.998	2.998	2.998	2.998	2.998	2.998	2.998	3.143
MDL	0.18	0.0044	0.020	0.058	0.0020	0.023	0.25	0.21
RL	0.5	0.01	0.07	0.2	0.007	0.07	0.7	0.7

ICP-MS - Inductively Coupled Plasma Mass Spectrometry

CVAA = Cold Vapor Atomic Absorption Spectroscopy

ICP-OES = Inductively Coupled Plasma Optical Emissions Spectroscopy

RL = Reporting Limit (RL) determined as 3.18 * achieved MDL and rounded to nearest 1, 2, 5, or 7 following EPA conventions

Battelle Marine Science Laboratory

Method Detection Limit Study Summary

Date: 6/18/2008

MATRIX: Freshwater

PREPARATION METHOD: Total Recoverable Metals (TRM)

UNITS: µg/L

	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Se	Zn
Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	CVAF	ICP-MS	ICP-MS	FIAS	ICP-MS
Analysis Date:	3/4/2008	3/4/2008	3/4/2008	3/4/2008	3/4/2008	2/1/2008	3/4/2008	3/4/2008	4/8/2008	3/4/2008
CAS Code:	7440-22-4	7440-38-2	7440-43-9	7440-47-3	7440-50-8	7439-97-6	7440-02-0	7439-92-1	7782-49-2	7440-66-6
MDL 1	0.0292	0.0239	0.0301	0.550	0.518	0.000706	0.0357	0.0319	0.414	0.496
MDL 2	0.0321	0.0234	0.0318	0.544	0.493	0.000640	0.0311	0.0329	0.403	0.504
MDL 3	0.0345	0.0272	0.0339	0.552	0.508	0.000588	0.0270	0.0336	0.413	0.499
MDL 4	0.0330	0.0336	0.0279	0.548	0.514	0.000641	0.0328	0.0328	0.384	0.493
MDL 5	0.0337	0.0199	0.0295	0.639	0.495	0.000599	0.0338	0.0316	0.393	0.498
MDL 6	0.0304	0.0211	0.0294	0.568	0.512	0.000627	0.0276	0.0339	0.385	0.506
MDL 7	0.0322	0.0267	0.0302	0.518	0.515	0.000536	0.0347	0.0322	0.423	0.484
MDL 8	0.0318	0.0228	0.0299	0.551	0.517	0.000663	0.0336	0.0314	0.353	0.480
MEAN	0.0321	0.0248	0.0303	0.559	0.509	0.000625	0.0320	0.0325	0.396	0.495
STDEV	0.00169	0.00433	0.00178	0.0353	0.0098	0.0000514	0.00324	0.00090	0.0224	0.0089
student-t value	2.998	2.998	2.998	2.998	2.998	2.998	2.998	2.998	2.998	2.998
MDL	0.0051	0.013	0.0053	0.11	0.029	0.00015	0.010	0.0027	0.0671	0.027
RL	0.02	0.05	0.02	0.5	0.1	0.0005	0.02	0.01	0.2	0.1

FIAS = Flow Injection Atomic Spectroscopy (Hydride Generation)

ICP-MS - Inductively Coupled Plasma Mass Spectrometry

CVAF = Cold Vapor Atomic Fluorescence

RL = Reporting Limit (RL) determined as 3.18 * achieved MDL and rounded to nearest 1, 2, 5, or 7 following EPA conventions

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

USACE NED - Searsport Harbor

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly (NOTE: MSL performs daily for ICP-MS)	Yes		Retained at Lab
Initial Calibration for ICP-MS, ICP-OES, and Hg	Performed Daily (Correlation Coefficient ≥ 0.995)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	No	One As CCV (111%) - prior CCV and following CCV were both acceptable.	Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit	Yes		Retained at Lab
Standard Reference Materials	$\pm 25\%$ percent difference from certified value if certified greater than 10x MDL	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

* The Quality Control Acceptance Criteria are available in the SAP Searsport Harbor.

ATTACHMENT D

COMPLETENESS CHECKLIST

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Table II-1: Completeness Checklist

Quality Assurance/Quality Control Questions	Yes/No? Comments?
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes, except for deviations noted in Section 2.3.5 of the Data Report.
3. If not, were deviations documented?	
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes, except for arsenic, lead, and toxaphene. Laboratory achieved MDLs were all well below the required RLs
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	Yes, except for PCB 209 and benzo(a)pyrene.
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	Yes, except for naphthalene.
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	Yes
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	Yes
20. Were corrective action forms provided for all non-conforming data?	Yes
21. Were all the species-specific test conditions in Appendix V met?	NA
22. Were the test-specific age requirements met for each test species?	NA
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	NA
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	NA
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	NA

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