SEARSPORT HARBOR
SEARSPORT, MAINE
NAVIGATION IMPROVEMENT PROJECT

TECHNICAL REPORT 3

FIELD SAMPLING
AND SEDIMENT TESTING

September 2008

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US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004
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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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TABLE OF CONTENTS

1.0 INTRODUCTION 3
1.1 Project Description 3
1.2 Scope of Work 3
1.3 Organization of this Report 3
2.0 MATERIALS AND METHODS 4
2.1 Sample Collection/Processing 4
2.1.1 Sediment Core Collections 4
2.1.2 Reference Sediment Grab Collections 6
2.1.3 Rinsate Blank Sampling 7
2.1.4 Sediment Processing and Subsampling 7
2.2 Physical and Chemical Testing 7
2.2.1 Geotechnical Analysis 7
2.2.2 Organic Contaminants 8
2.2.2.1 Sediments 8
2.2.2.2 Rinsate Blanks 10
2.2.3 Metals 10
2.2.3.1 Sediments 10
2.2.3.2 Rinsate Blanks 10
2.3 Quality Assurance/Quality Control Procedures 11
2.3.1 Measurement Quality Objectives 11
2.3.2 Analytical Reporting 12
2.3.3 Chain of Custody 12
2.3.4 Data Audits/QA Review 12
2.3.5 Protocol Deviations 12
2.3.5.1 Field Survey 12
2.3.5.2 Laboratory Testing 12
3.0 RESULTS 13
3.1 Geotechnical Analysis 13
3.2 Sediment Chemistry 15
3.2.1 Total Organic Carbon 15
3.2.2 PCBs and Pesticides 15
3.2.3 Polycyclic Aromatic Hydrocarbons 15
3.2.4 Metals 15
3.3 Quality Control 17
4.0 REFERENCES 17

TABLES

Table 2-1. Cross-reference for Station ID and Individual Sample ID. 6
Table 2-2. List of Parameters Analyzed and Laboratory Achieved Detection Limits.....9
Table 2-3. Measurement Quality Objectives. 11
Table 2-4. Data Reporting Qualifiers.....12
Table 3-1. Summary of Geotechnical Results for Sediment Cores and Reference Samples.....14
Table 3-2. Summary of Sediment Organic Contaminant (µg/Kg dry weight) and Metals (µg/g dry weight) Data. 16

FIGURES

Figure 2-1. Sampling Locations within Searsport Harbor and Reference Locations. 5

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.

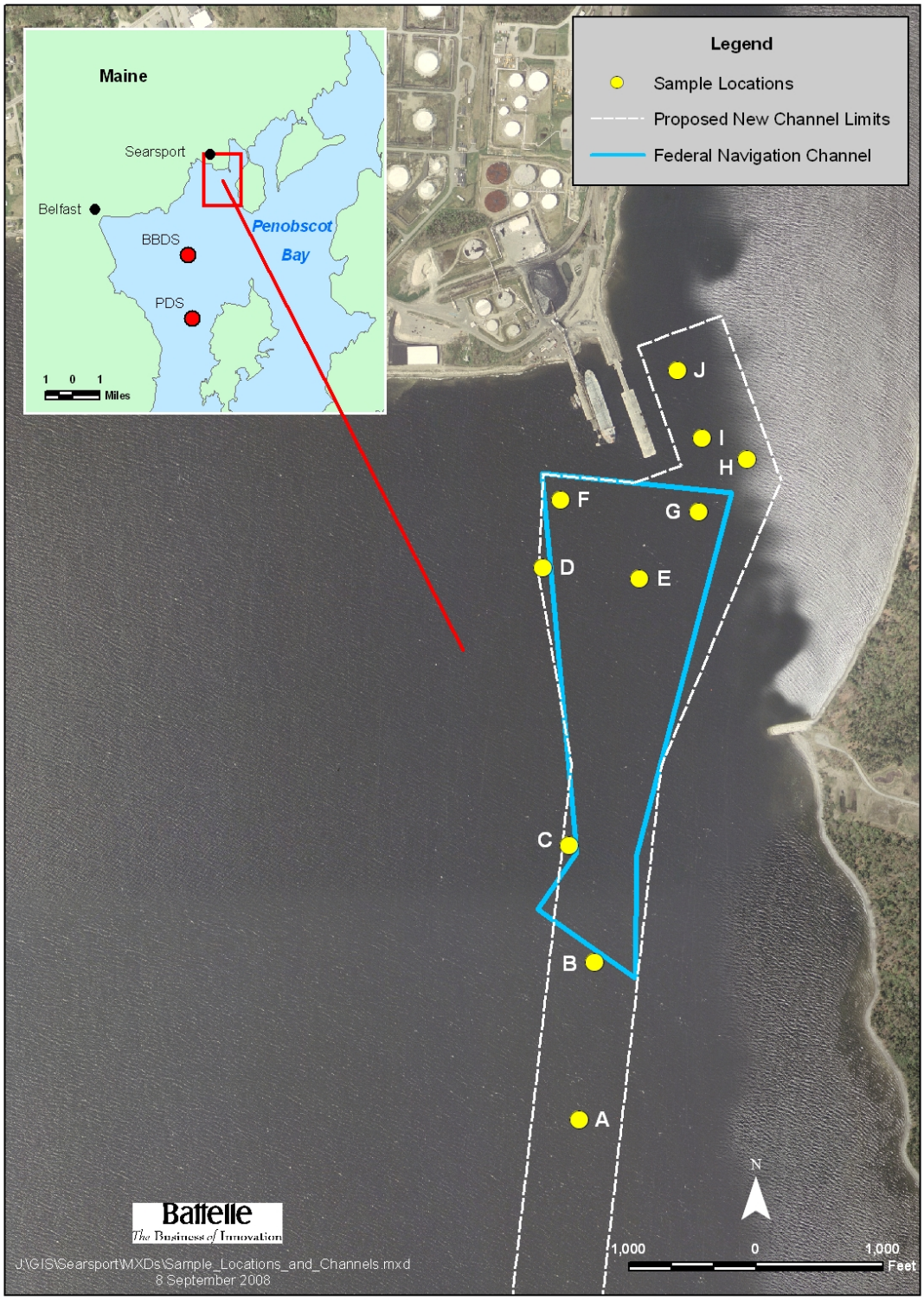

Figure 2-1. Sampling Locations within Searsport Harbor and Reference Locations.

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 $4^oC \pm 2^oC$ until returning from the field to Battelle. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^oC \pm 2^oC$) 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
	J		HAC-010
Belfast Bay Disposal Site (reference)	BBDS (1 of 3)	Sediment Grab	HAC-012
	BBDS (2 of 3)		HAC-013
	BBDS (3 of 3)		HAC-014
Penobscot Disposal Site (reference)	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-m^2 Van Veen grab sampler; sediment was placed into labeled, 3.5-gallon polyethylene buckets, transferred into a refrigerator truck, and stored at $4^oC \pm 2^oC$ until returning from the field to Battelle. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^oC \pm 2^oC$) 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°C±2°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°C±2°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 (µg/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 130ºC (±10ºC) 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 (µg/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×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:* ≤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: ≤30% RPD[b] between % recoveries Sample Duplicate: ≤30% RPD[d] between values Grain Size: RPD ≤ 25% TOC: RPD ≤ 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× 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× 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 EGHI 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 EGHI. 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.

	Sediment Quality Guidelines (Long *et al.* 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	
Parameter	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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US ARMY CORPS
OF ENGINEERS
New England District

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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TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Site Description 2
1.2 Project Objectives 2
2.0 FIELD SAMPLING 2
2.1 Harbor Sampling 4
2.2 Reference Site Sampling 4
2.3 Field Quality Control 5
2.4 Sample Processing 5
3.0 SURVEY CHRONOLOGY 6
4.0 SURVEY RESULTS 7
5.0 PROBLEMS EXPERIENCED, ACTIONS TAKEN, AND RECOMMENDATIONS 7
6.0 REFERENCES 7

LIST OF TABLES

TABLE 1. SAMPLING SITES, COORDINATES, AND DEPTHS FOR THE SEARSPORT HARBOR FNP 1
TABLE 2. SURVEY PERSONNEL AND RESEARCH VESSELS FOR THE SEARSPORT HARBOR FNP 2
TABLE 3. SUMMARY OF SAMPLE COLLECTIONS FOR THE SEARSPORT HARBOR FNP 4
TABLE 4. SUMMARY OF RINSATE BLANKS COLLECTED FOR THE SEARSPORT HARBOR FNP 5

LIST OF FIGURES

FIGURE 1. SAMPLING LOCATIONS WITHIN SEARSPORT HARBOR AND REFERENCE LOCATIONS. 3

APPENDICES

APPENDIX A: DAILY FIELD LOGS
APPENDIX B: CORE SAMPLING LOGS
APPENDIX C: SEDIMENT GRAB STATION LOGS
APPENDIX D: CORE PROCESSING LOGS
APPENDIX E: CORE PHOTOS
APPENDIX F: SITE SAFETY FORMS
APPENDIX G: CHAIN OF CUSTODY FORMS

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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]

[a]Penobscot Disposal Site; [b]Belfast Bay Disposal Site; [c]Not 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.

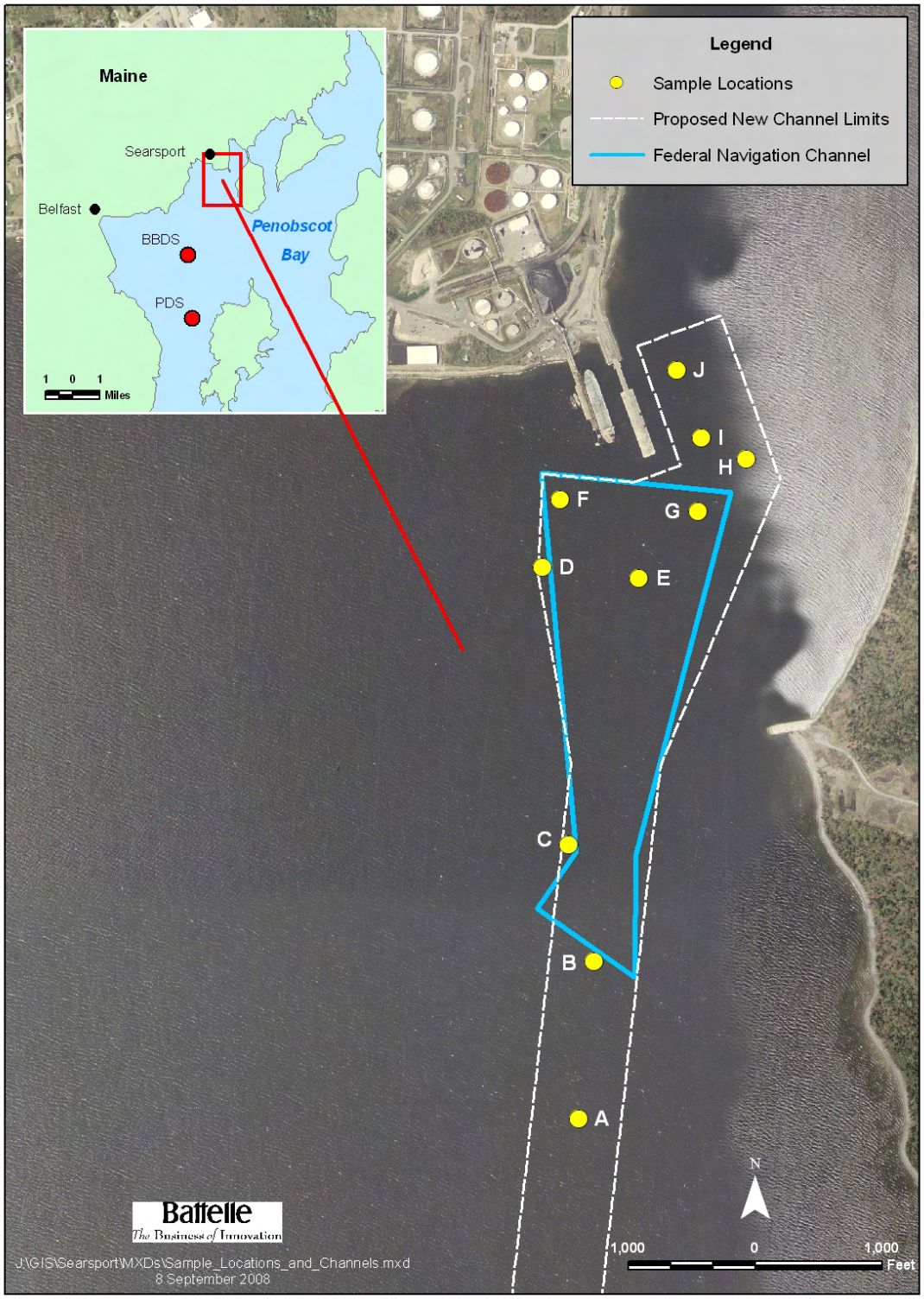

Figure 1. Sampling Locations within Searsport Harbor and Reference Locations.

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 $4^oC \pm 2^oC$ until returning from the field to Battelle, Duxbury. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^oC \pm 2^oC$) 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

[a]Penobscot Disposal Site; [b]Belfast Bay Disposal Site; [c]Not 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-m^2 Van Veen grab sampler; sediment was placed into labeled, 3.5-gallon polyethylene buckets, transferred into a refrigerator truck and stored at $4^oC \pm 2^oC$ until returning from the field to Battelle, Duxbury. Upon arrival at Battelle, core samples were placed in a secure, continuously monitored cold room ($4^oC \pm 2^oC$) 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°C±2°C until transport to the participating laboratories for chemical analysis. Rinsate blanks for metals analysis were preserved to 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°C±2°C	7 days to extract	Battelle Duxbury (Jeannine Seyfert)
Metals	HAC-011	05/01/08	18:30	1-500mL Teflon Bottle	full	Cold 4°C±2°C	Acidified (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°C±2°C	7 days to extract	Battelle Duxbury (Jeannine Seyfert)
Metals	HAC-018	05/02/08	11:00	1-500mL Teflon Bottle	full	Cold 4°C±2°C	Acidified (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°C±2°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.

EPA/USACE (U.S. Environmental Protection Agency/U.S. Army Corps of Engineers). 2004. *Final Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters*. April 2004.

APPENDIX A
DAILY FIELD LOGS

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Field Log Form

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

DATE _INITIALS 04/30/08 MPM **START TIME_STOP TIME** 0745 / 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
1508	45°F	none	ptly cloudy	15 kts NW

COMMENTS

surveyed tidal benchmark at public launch ~~on~~ USACE benchmark ~~used to determine~~ elevation ± MLLW
(WGS 84) N 44° 27.187' / W 068° 55.514'
(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 Garmin	NAD83 / ~~Deg~~ Deg Min	44° 27.143	68° 55.492	08:20
Leica	NAD83 / Deg Dec Min	44° 27.1429	68° 55.4929	
End of day Garmin	NAD83 / Dec Deg Min	44° 27.141	68° 55.477	18:00
Leica	NAD83 / Deg Dec Min	44° 27.1414	68° 55.4758	

Comments - Cross checked Leica MX410 dGPS (TG&B) 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

Picantra 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 _INITIALS 05/01/08 MPM **START TIME,STOP TIME** 07:30 / 18:30
FIELD LOCATION: Searsport Harbor, Searsport ME

VESSEL NAME Carolina Skiff

PERSONNEL	AFFILIATION
Mark Arakian	TGAB
John Scanlon	
Lenny Perry	Battelle
Mike McKee	

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 vibracore 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	Time
Beginning of day Garmin	NAD 83 / Deg Dec Min	44° 27.143 N	68° 55.476 W	03:13
Beginning of day Leica	↓	44° 27.1415 N	68° 55.4758 W	
End of day Garmin	↓	44° 27.184 N	68° 55.520 W	18:20 (1)
End of day Leica	↓	44° 27.1836 N	68° 55.5218 W	

Comments -
cross checked Leica MX410 dGPS (TG78) with Battelle's handheld Garmin 12XL

Date/Time 05/01/08 Vessel Carolina Skiff
Unit Make/Model Garmn 12XL / Leica MX410

HEALTH AND SAFETY BRIEFING:

- slips, trips & falls
- decon precautions
- overhead 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 _INITIALS 05/02/08 NSM **START TIME_STOP TIME** 07:45 / 12:00
FIELD LOCATION: Penobscott Bay Disposal Sites

VESSEL NAME R/v Moonfish

PERSONNEL	AFFILIATION
Mike McKee	Battelle
Lenny Perry	>TG&B
John Scallon	
Bob Bernstein	Moonfish Captain

WEATHER

TIME	TEMP °F ~~°C~~	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 Moonfish Garmin	NAD83 / Deg Dec. Min	44° 25.735 44° 25.734	069° 00.204 069° 00.206	07:30
End of day Moonfish Garmin	↓ ↓	44° 25.745 44° 25.747	069° 00.179 069° 00.178	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: 05/01/08
Reduced Sounding (MLW from chart): at Line 46.2 / Fsmo 46' / Measured Tide +5.2 MLW Sounding:	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: calm	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: 50°F / clear / winds 5kts W	___ Water Sampler ___ Other (specify)

Coordinates WP 691 ① Latitude: N 44° 26.1612 Longitude: W 68° 53.9233	Penetration Depth: 3' Recovery Depth: <1'	Time: 10:59
Coordinates Latitude: N 44° 26.1614 Longitude: W 68° 53.9232	Penetration Depth: 3' Recovery Depth: 2'	Time: 11:12
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:

WD = 45.6'

Material Description: fine silt to soft clay on bottom	Notes: ① poor recovery / core discarded tanker docked at Mack Pt. / another steaming into anchorage

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): weighted line / fatho / measured Tide Sounding: 44' / 43' / +4.0 MLW	Location Method ✓ dGPS ___ Loran ___ Depth ___Ranges/Bearing	
Sea State: choppy / 1'	Sampler Type: ✓ Vibra Core ___Gravity Corer ___Push Tube ___ Water Sampler ___ Other (specify)	
Weather: 45°F / ptly cloudy / winds 15-20 kts NW		
Coordinates WP 689 Latitude: 44° 26.3622 N Longitude: 68° 53.5938 W	Penetration Depth: 6.9' Recovery Depth: 6.9'	Time: 15:25
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: olive grey silty clay to firm clay	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): Weighted Line/Fathe / Measured Tide Sounding: 38.4' 38' / +0.8 MLLW	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing	
Sea State: calm	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube	
Weather: 50°F / ptly cloudy / winds 5 kts NW	___ Water Sampler ___ Other (specify)	
Coordinates WP 681 Latitude: 44°26.5171 N Longitude: 68°53.9397 W	Penetration Depth: 7' Recovery Depth: 6.8'	Time: 12:26
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:
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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:	

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): Weighted Line / Fathro / Measured Tide Sounding: 32.4' / 32' / +2.8 MLW	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 Coordinates WP 678 Latitude: 44° 26 8784 N Longitude: 68° 53.9869 W	Penetration Depth: 6.5' Recovery Depth: 4'	Time: 10:35
WD = 32.2' Coordinates WP 679 Latitude: 44° 26.8776 N Longitude: 68° 53 9872 W	Penetration Depth: 7' Recovery Depth: 7'	Time: 1055
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):
Sounding: WT Line 46.1' / Fathom 47' / measured Tides +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 (1) Latitude: 44 26.8621 Longitude: 68 53.8131	Penetration Depth: 5' Recovery Depth: 3'	Time: 1630
Coordinates WP 685 Latitude: 44° 26.8635 N Longitude: 68 53.8120 W	Penetration Depth: 4.5' Recovery Depth: 2.9'	Time: 16:42
Coordinates WP 686 Latitude: 44° 26.8635 N Longitude: 68° 53.8120 W	Penetration Depth: 4.2' Recovery Depth: 2.6'	Time: 17:08
Coordinates WP 692 (2) Latitude: 44 26.8626 N Longitude: 68 53.8113 W	Penetration Depth: 4.5' Recovery Depth: —	Time: 13:25
Coordinates Latitude: 44 26.8628 N Longitude: 68 53.8118 W	Penetration Depth: 5' Recovery Depth: 3.5'	Time: 13:45
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:

1 of 3
2 of 3
3 of 3

WD = 47.2'
WD = 47.8'
WD =
Date: 40.8' 05/01/08
Tide = 1.1' (3)

Material Description:
- Olive grey 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 3 of 3

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): Sounding: weighted line / fatho / Measured tide 37.2' / 37' / +2.3 MLLW	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 5-10kt NW		
Coordinates WP 680 Latitude: 44°26.9653 N Longitude: 68 53.9541 W	Penetration Depth: 7.8' Recovery Depth: 7.4'	Time: 11:30
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:
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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:	

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): weighted Line / Fathometer / Measured Tide Sounding: 45.8' / 45' / +6.6 MLLW	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: choppy	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: 45°F / ptly cloudy / winds 5-10 NW	___ Water Sampler ___ Other (specify)

Coordinates	Depths	Time
Coordinates Latitude: 44° 26.9501 N WP676 Longitude: 68° 53.7050 W	Penetration Depth: 6' Recovery Depth: 5.3'	Time: 0950
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: - silty clay at surface to firm clay at bottom - olive gray to dark gray transition at 2.5'	Notes:

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): Sounding: 29.3 (Wt Line) Measured Tide +2.92 MLLW	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: choppy	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: 50°F / overcast /	___ Water Sampler ___ Other (specify)

Coordinates	Penetration / Recovery	Time
Coordinates WP 693 ① Latitude: N 44°27.0183 Longitude: W 68°53.6165	Penetration Depth: 4' Recovery Depth: 2.9'	Time: ~~16:00~~ ③ MPM 15:00
Coordinates 694 ② Latitude: N 44° 27.0181 Longitude: W 68°53.6172	Penetration Depth: 3.5' Recovery Depth: 3.1'	Time: ~~1618~~ 15:18
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:

Margin notes: WD = 29.6' (beside coordinates 694); 1oCZ (beside first time); 20CZ (beside second time)

Material Description:	Notes:
olive grey fine silt to soft clay bottom	① poor recovery - discarded core not recorded on sheet ② Switched from vibracore to push core to attempt > recovery ③ Time incorrectly logged in military format

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: Wt. Line 35.5' / Fatho 35' / Measured Tide +6.3 MLLW	Location Method ✓ dGPS ___ Loran ___ Depth ___Ranges/Bearing
Sea State: calm	Sampler Type: ✓ Vibra Core ___Gravity Corer ___Push Tube ___ Water Sampler ___ Other (specify)
Weather: 50°F / clear / winds 5 kts NW	

Coordinates	Penetration / Recovery	Time	
Coordinates WP690 Latitude: 44°27.0441 Longitude: 68°53.6990	Penetration Depth: 3' Recovery Depth: 2'	Time: 1015	1 of 2
WD = 31' Tide = 3.1' Coordinates WP695 ① Latitude: 44°27.0457 Longitude: 68°53.6992	Penetration Depth: 4' Recovery Depth: 3.1'	Time: 16:05	2 of 2
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:	Notes:
fine silt sand mix to soft clay on bottom	① switched from vibracore to push core to attempt > recovery

Coring Field Log

USACE NAE Project: Searsport Harbor, ME
Project # G606441

Sample ID: **HAC-010**	Sampled by: MPM	
Site: J	Date: 05/01/08	
Reduced Sounding (MLW from chart): Sounding: Wt Line 30' / Fatho 30' / Measured Tide +7.2 MLLW	Location Method ✓ dGPS ___ Loran ___ Depth ___Ranges/Bearing	
Sea State: calm	Sampler Type: ✓ Vibra Core ___Gravity Corer ___Push Tube ___ Water Sampler ___ Other (specify)	
Weather: 50°F / clear / winds 5kts N		
Coordinates WP 689 Latitude: N 44° 27.1328 Longitude: W 68° 53.7423	Penetration Depth: 3' Recovery Depth: 2'	Time: 08:58 (1 of 2)
(WD = 24.2') Coordinates WP 696 ① Latitude: N 44° 27.1340 Longitude: W 68° 53.7417 ②	Penetration Depth: 2' Recovery Depth:	Time: 1631
(WD = 26.2') Coordinates WP 697 Latitude: 44° 27.1335 Longitude: 68° 53.7405	Penetration Depth: 3' Recovery Depth: 2.4'	Time: 1720 (2 of 2)
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 silt/sand mixture bottom (1.4' to 2.4') transitions from sand to course sand/gravel	Notes: ① switched from vibracore (VC) to push core (PC) for improved recovery ② push core hitting refusal at 2' pen. gravelly sand bottom → switching to VC	

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
On Station Date: 05/02/08 Time: 08:20	Station Arrival label Date: 05/02/08 Time 08:20 Belfast Bay Disposal Site	Station Depth (~~M~~ Ft): 78.3 Weather: calm, clear, 55°F Winds: <5 kts Sea: calm Recorded by: MPM
Off Station 09:15	Sample #1 Latitude: 44° 24.351 N Longitude: 068° 55.956 W Time: 0828 Sample ID: HAC-Ø12	Grab Size: ~~0.04-m²~~ 0.1 m² Grab penetration (cm): Redox Depth (cm): N/A Sediment Texture: olive grey silty clay no odor
	Comments: some polychaetes in the sample	
	Sample #2 Latitude: 44°24.351 N Longitude: 068° 55.908 W Time: 08:49 Sample ID: HAC-Ø13	Grab Size: ~~0.04-m²~~ 0.1 m² Grab penetration (cm): Redox Depth (cm): N/A Sediment Texture: olive grey silty clay no odor
	Comments: worm tubes	
	Sample #3 Latitude: 44°24.351 N Longitude: 068° 55.712 W Time: 09:05 Sample ID: HAC-Ø14	Grab Size: ~~0.04-m²~~ 0.1 m² Grab penetration (cm): Redox Depth (cm): N/A Sediment Texture: olive grey silty clay no odor
	Comments: worm tubes	
	Sample #4 Latitude: Longitude: Time: Sample ID:	Grab Size: 0.04-m² Grab penetration (cm): Redox Depth (cm): Sediment Texture:
	Comments:	
	Sample #5 Latitude: Longitude: Time: Sample ID:	Grab Size: 0.04-m² Grab penetration (cm): Redox Depth (cm): Sediment Texture:
	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 Islesboro Disposal Site	Station Depth (M): FT 146' Weather: calm, clear, 55°F Winds: < 5kts Sea: calm Recorded by: MPM
off station 11:08	**Sample #1** Latitude: 44° 22.258 N Longitude: 068° 55.489 W Time: 09:50 Sample ID: HAC-015 Comments: worm tubes	Grab Size: ~~0.04-m²~~ 0.1m² 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-m² 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-m² 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-m² Grab penetration (cm): Redox Depth (cm): Sediment Texture:
	Sample #5 Latitude: Longitude: Time: Sample ID: Comments:	Grab Size: 0.04-m² Grab penetration (cm): Redox Depth (cm): Sediment Texture:

Remarks: Decon grab after arriving on station
strong current
Decon and rinsate collection on site, after samples collected

APPENDIX D
CORE PROCESSING LOGS

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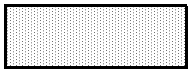
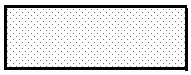
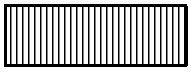
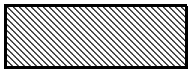
LITHOLOGY	TYPE	DESCRIPTION
	GM	Silty gravels, gravel and silt and sand mixtures
	SW	Well-graded sands, gravelly sands
	SP	Poorly-graded sands, gravelly sands
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
	ML	Silts and very fine sands, silty or clayey fine sands, or clayey silts, 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

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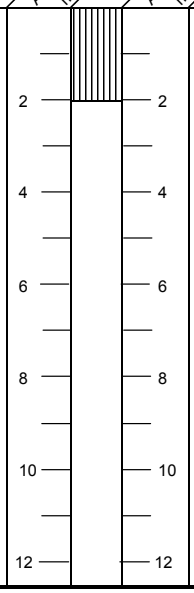
The Business of Innovation

Project #:	*G606441*	**Vessel:**	*R/V Carolina Skiff*
Project Name:	*Searsport Harbor*	**Chief Scientist:**	*Michael McKee*
Location:	*Searsport, ME*	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	*USACE NAE*		

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
		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

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

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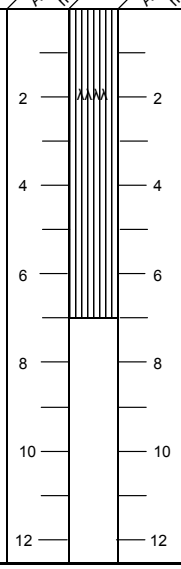
Project #:	***G606441***	**Vessel:**	***R/V Carolina Skiff***
Project Name:	***Searsport Harbor***	**Chief Scientist:**	***Michael McKee***
Location:	***Searsport, ME***	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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:					



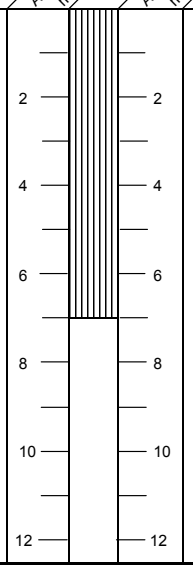
As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
		ML	clayey-silt silty-clay	dk olive gr. olive gr.	soft mod. firm	fine	slight H_2S	HAC-002-0-1' HAC-002-1'-2' HAC-002-2'-7.3'	0 - 0.6': soft clayey silt (dark olive grey) with slight H_2S odor; 0.6 - 6.9' transition from clayey silt to silty clay (olive grey - moderately firm); organic matter at 2'

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):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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
		ML	clayey-silt silty-clay	dk olive gr. olive gr.	soft mod. firm	fine	slight H_2S	HAC-003-0-1' HAC-003-1'-2' HAC-003-2'-6.9'	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_2S odor on top

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

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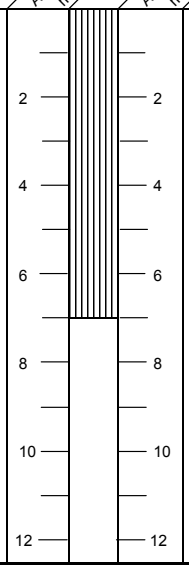
The Business of Innovation

Project #:	***G606441***	**Vessel:**	***R/V Carolina Skiff***
Project Name:	***Searsport Harbor***	**Chief Scientist:**	***Michael McKee***
Location:	***Searsport, ME***	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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
		ML	silt silty-clay	dk olive gr. olive gr.	soft mod. firm firm	fine	slight H_2S	HAC-004-0'-1' HAC-004-1'-2' HAC-004-2'-bottom	0 - 0.3': soft clayey silt (dark olive grey) - slight H_2S odor; 0.3 - 6.9' silty clay moderately firm to firm (olive grey); fragments of wood at 4.6'

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

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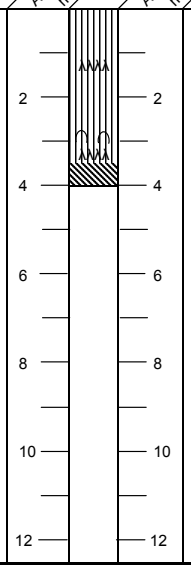
The Business of Innovation

Project #:	*G606441*	**Vessel:**	*R/V Carolina Skiff*
Project Name:	*Searsport Harbor*	**Chief Scientist:**	*Michael McKee*
Location:	*Searsport, ME*	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	*USACE NAE*		

Station ID:	**E**	**Time On Station:**	**13:45**	**Attempt:**			**Feet**
Station Descriptor:		**Date:**	**05/01/08**	**5**	**Total Penetration:**		**5'**
Core Sample ID:	**HAC-005**	**Northing (NAD 83):**	**44° 26.8628**		**Recovery:**		**3.5'**
Logged by:	***MPM/JMF***	**Easting (NAD 83):**	**68° 53.8118**		**Time of collection:**		**13:45**
Collection Mechanism:	***Vibracore***	**GPS Accuracy:**			**Total Penetration:**		
		Water Depth (ft):	**40.8'**		**Recovery:**		
		Tide (ft):	**+1.1'**		**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
		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);
			organics	dk brwn				HAC-005-1'-2'	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;
			clayey-silt organics	olive gr. dk brwn				HAC-005-2'-bottom	firm clay (light grey) from 3.4 - 3.6'
		CH	clay	light gr.	firm				

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

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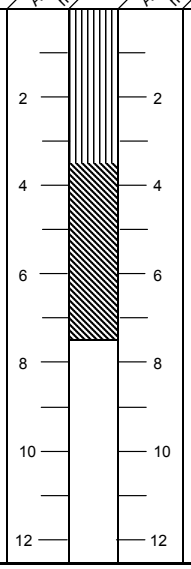
The Business of Innovation

Project #:	***G606441***	**Vessel:**	***R/V Carolina Skiff***
Project Name:	***Searsport Harbor***	**Chief Scientist:**	***Michael McKee***
Location:	***Searsport, ME***	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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:					



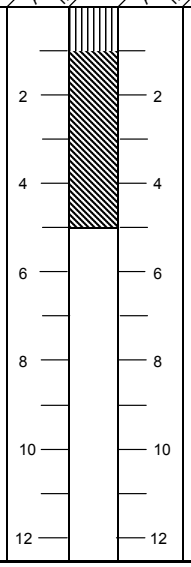
As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
		ML CH	clayey-silt silty-clay clay	dk olive gr. olive gr. lt blue/gr.	soft mod. firm firm	fine	slight H_2S	HAC-006-0-1.9' HAC-006-1.9-3.6' HAC-006-3.6'-7.3'	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_2S odor in top foot

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

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):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

Station ID:	**G**	**Time On Station:**	**9:50**	**Attempt:**			**Feet**
Station Descriptor:		**Date:**	**04/30/08**	**1**	**Total Penetration:**		**6'**
Core Sample ID:	**HAC-007**	**Northing (NAD 83):**	**44° 26.9501**		**Recovery:**		**5.2'**
Logged by:	***MPM/JMF***	**Easting (NAD 83):**	**68° 53.7050**		**Time of collection:**		**9:50**
Collection Mechanism:	***Vibracore***	**GPS Accuracy:**		**2**	**Total Penetration:**		
		Water Depth (ft):	**45.8'**		**Recovery:**		
		Tide (ft):	**+6.6'**		**Time of collection:**		
		Time Depart Station:					



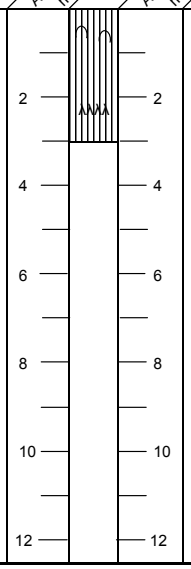
As Sampled depth below mudline (ft)*	Adjusted depth below mudline (ft)*	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
		ML ↓ CH	silty-clay ↓ firm clay	olive gr. ↓ lt gr. ↓ dark gr. lt gr. bands of dark gr.	mod. firm ↓ firm	fine	none	HAC-007-0'-1'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

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):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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
		ML	clayey silt w/ some FS silty-clay	dk olive gr. ↓ olive gr.	mod. ↓ mod. firm	fine	slight H_2S	HAC-008-0'-1' HAC-008-1'-2' HAC-008-2'-3.2'	0 - 0.7': clayey silt with trace of fine sands; 0.7 - 1.7' gradual transition from clayey silt to silty clay; shell hash at 0.5' (gravel noted when subsampling); organic matter at 2.4'; color transition from dark olive

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

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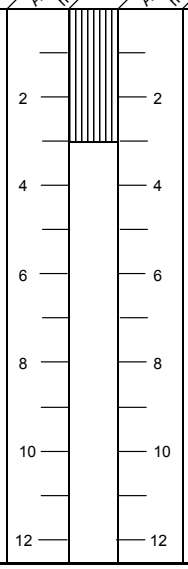
Project #:	***G606441***	**Vessel:**	***R/V Carolina Skiff***
Project Name:	***Searsport Harbor***	**Chief Scientist:**	***Michael McKee***
Location:	***Searsport, ME***	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

Station ID:	**I**	**Time On Station:**	**16:05**	**Attempt:**			**Feet**
Station Descriptor:		**Date:**	**05/01/08**	**1**	**Total Penetration:**		**3'**
Core Sample ID:	**HAC-009**	**Northing (NAD 83):**	**44° 27.0457**		**Recovery:**		**2'**
Logged by:	***MPM/JMF***	**Easting (NAD 83):**	**68° 53.6992**		**Time of collection:**		**10:15**
Collection Mechanism:	***Push Core***	**GPS Accuracy:**		**2**	**Total Penetration:**		**4'**
		Water Depth (ft):	**31'**		**Recovery:**		**3.1'**
		Tide (ft):	**+3.1'**		**Time of collection:**		**16:05**
		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
		ML	clayey silt	olive gr.	soft	fine	slight H_2S	HAC-009-0'-1'	0 - 3.1' gradual transition from soft clayey silt to moderately firm silty clay; olive grey throughout; slight H_2S odor
			silty-clay		mod. firm			HAC-009-1'-2'	
								HAC-009-2-3.1'	

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

Battelle
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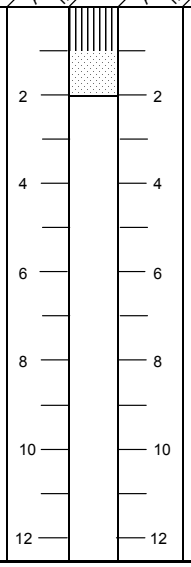
Project #:	***G606441***	**Vessel:**	***R/V Carolina Skiff***
Project Name:	***Searsport Harbor***	**Chief Scientist:**	***Michael McKee***
Location:	***Searsport, ME***	**Survey Duration (Date & Time):**	**4/30/08 to 5/2/08**
Client:	***USACE NAE***		

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
		ML ↓ SP	clayey silt ↓ silty clay w/ sand gravel	dk olive gr. olive gr. ↓	soft mod. firm ↓ coarse	gravel	slight H_2S ↓	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'

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

Battelle
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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:	A	Time On Station:	11:12	Attempt: 2	Feet 2'
Station Descriptor:		Date:	05/01/08	1 Total Penetration:	3'
Core Sample ID:	HAC-001	Northing (NAD 83):	44° 26.1614	Recovery:	2'
Logged by:	MDM/JMF	Easting (NAD 83):	68° 53.9232	Time of collection:	11:12
Collection Mechanism:	*Vibracore*	GPS Accuracy:		2 Total Penetration:	
		Water Depth (ft):	45.6'	Recovery:	
		Tide (ft):	+5.2'	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
			clayey silt ↓ silty clay	dark olive grey / olive grey	soft ↓ mod firm	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

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

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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:	B	Time On Station:	15:25	Attempt: 1	Feet 6.9'
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
0	0		clayey silt ↓ silty clay	dark olive grey ↓ olive grey	soft ↓ mod firm	fine	slight H_2S		0-0.6' soft clayey silt (dark olive grey w/ slight H_2S odor 0.6-6.9' transition from clayey silt to silty clay olive grey - moderately firm organic matter @ 2'
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:	C	Time On Station:	12:26	Attempt: 1	Feet 6.9'
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
0	0		clayey silt ↓ silty clay	dark olive grey ↓ olive grey	soft ~~~ mod firm	fine	slight H_2S odor		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) w/ piece of wood at 5.8' - slight H_2S odor on top
2	2								
4	4								
6	6								
8	8								
10	10								
12	12								

Comments: no defined horizon / subsampled from top 1' and 2nd ft 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: D
Station Descriptor:
Core Sample ID: HAC-004
Logged by: MBM/MRF
Collection Mechanism: *Vibracore*

Time On Station: 10:55 Attempt: 2 Feet 6.9'
Date: 04/30/08 (1) Total Penetration: 6.5'
Northing (NAD 83): 44° 26.8776 Recovery: 4'
Easting (NAD 83): 68° 53.9872 Time of collection: 10:35
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
			silt ↓ silty clay	dark olive grey ↓ olive grey	soft ↓ mod firm ↓ firm	fine	slight H_2S		0-0.3' soft clayey silt (dark olive grey) slight H_2S odor 0.3-6.9' silty clay moderately firm to firm olive grey fragments of wood @ 4.6'

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

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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:	E	Time On Station:	13:45	Attempt: #3	Feet 3.6'
Station Descriptor:		Date:	05/01/08	Total Penetration:	5'
Core Sample ID:	HAC-005	Northing (NAD 83):	44° 26.8628	Recovery:	3.5'
Logged by:	MPM/JMF	Easting (NAD 83):	68° 53.8118	Time of collection:	13:45
Collection Mechanism:	Vibracore	GPS Accuracy:		Total Penetration:	
		Water Depth (ft):	40.8'	Recovery:	
		Tide (ft):	+1.1'	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
0	0		silty clay	olive grey	mod firm	fine			0-1' moderately firm clayey silt to silty clay olive grey color
			↓ organic	dark brown					1-3.4' moderately firm silty clay (olive grey) w/ 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'
2	2		clayey silt	olive grey					
			organic	dark brown					
4	4		clay	light grey	↓ firm				
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)

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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):	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
0	0		clayey silt ↓ silty clay	dark olive grey ↓ olive grey	soft ↓ mod firm	fine	slight H_2S		0-1.9' soft clayey silt (dark olive grey)
2	2								1.9'-3.6' silty clay (olive grey)
4	4		clay	light blue/grey	firm				horizon @ 3.6' - mod firm
6	6								3.6-7.3' native light blue/grey clay-firm
8	8								slight H_2S odor in top foot
10	10								
12	12								① MPM

Comments: horizon at 3.6' / subsampled ~~0-3.6' not 3.6-7.3'~~ 0-1.9', 1.9-3.6', 3.6-7.3'

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

Battelle
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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:	G	Time On Station:	09:50	Attempt: 1	Feet 5.2'
Station Descriptor:		Date:	04/30/08	1 Total Penetration:	6'
Core Sample ID:	HAC-007	Northing (NAD 83):	44° 26.9501	Recovery:	5.2'
Logged by:	MAM/JMF	Easting (NAD 83):	68° 53.7050	Time of collection:	09:50
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
			silty clay ↓ firm clay	olive grey ↓ light 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'
				dark grey					

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
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

① 15:18

Station ID: H
Station Descriptor:
Core Sample ID: HAC-008
Logged by: MPM/JMF
Collection Mechanism: ~~Vibracore~~ push core

Time On Station: ~~16:18~~
Date: 05/01/08
Northing (NAD 83): 44° 27.0181
Easting (NAD 83): 68° 53.6172
GPS Accuracy:
Water Depth (ft): 29.6'
Tide (ft): +2.9'
Time Depart Station:

Attempt: 2 of 2 Feet 3.1'
Total Penetration: 4'
Recovery: 2.9' ①
Time of collection: ~~16:00~~ 15:00

2 Total Penetration: 3.5'
Recovery: 3.1' ①
Time of collection: ~~15:18~~ 15:18

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
				0.7' dk olive grey	moderate	Fine	light H_2S	0.7'	0-0.7' clayey silt w/ trace fine sands
				1.7' olive grey	moderate firm	0.9'			0.7-1.7' gradual transition from clayey silt to silty clay
									shell hash @ 0.5' → gravel noted when subsampling
									organic matter @ 2.4'
									color transition from dark olive

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 time 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:	I	Time On Station:	16:05	Attempt: 2	Feet 3.1'
Station Descriptor:		Date:	05/01/08 X	Total Penetration:	3'
Core Sample ID:	HAC-009	Northing (NAD 83):	44° 27.0457	Recovery:	2'
Logged by:	MDM/JMF	Easting (NAD 83):	68° 53.6992	Time of collection:	10:15
Collection Mechanism:	~~Vibracore~~ push core	GPS Accuracy:		(2) Total Penetration:	4'
		Water Depth (ft):	31'	Recovery:	3.1'
		Tide (ft):	+3.1'	Time of collection:	16:06
		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 ↓ silty clay	olive grey	soft ↓ mod. firm	fine	slight H_2S odor		0-3.1' gradual transition from soft clayey silt to moderately firm silty clay - olive grey throughout - slight H_2S odor

Comments: no defined horizon / subsampled top 1' and 2nd ft 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:	J	Time On Station:	08:58	Attempt: 1	Feet 2.1'
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:	MMM/JMF	Easting (NAD 83):	68°58.7423	Time of collection:	08:58
Collection Mechanism:	Vibracore	GPS Accuracy:		~~(2)~~ Total Penetration:	3'
		Water Depth (ft):	30'	Recovery:	2.4'
		Tide (ft):	+7.2'	Time of collection:	17:20
		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
0	0		soft ↓ mod firm ↓ coarse	dark olive grey ↓ olive grey	clayey silt ↓ silty clay w/ sand gravel	gravel	slight H_2S odor		0-1' transition from silty/clayey sand (soft/dark olive grey) to moderately firm silty clay w/ coarse sand (olive grey) 1-2' silt/clay/sand to coarse sand and gravel large piece of gravel (~2" wide) at 1.5'

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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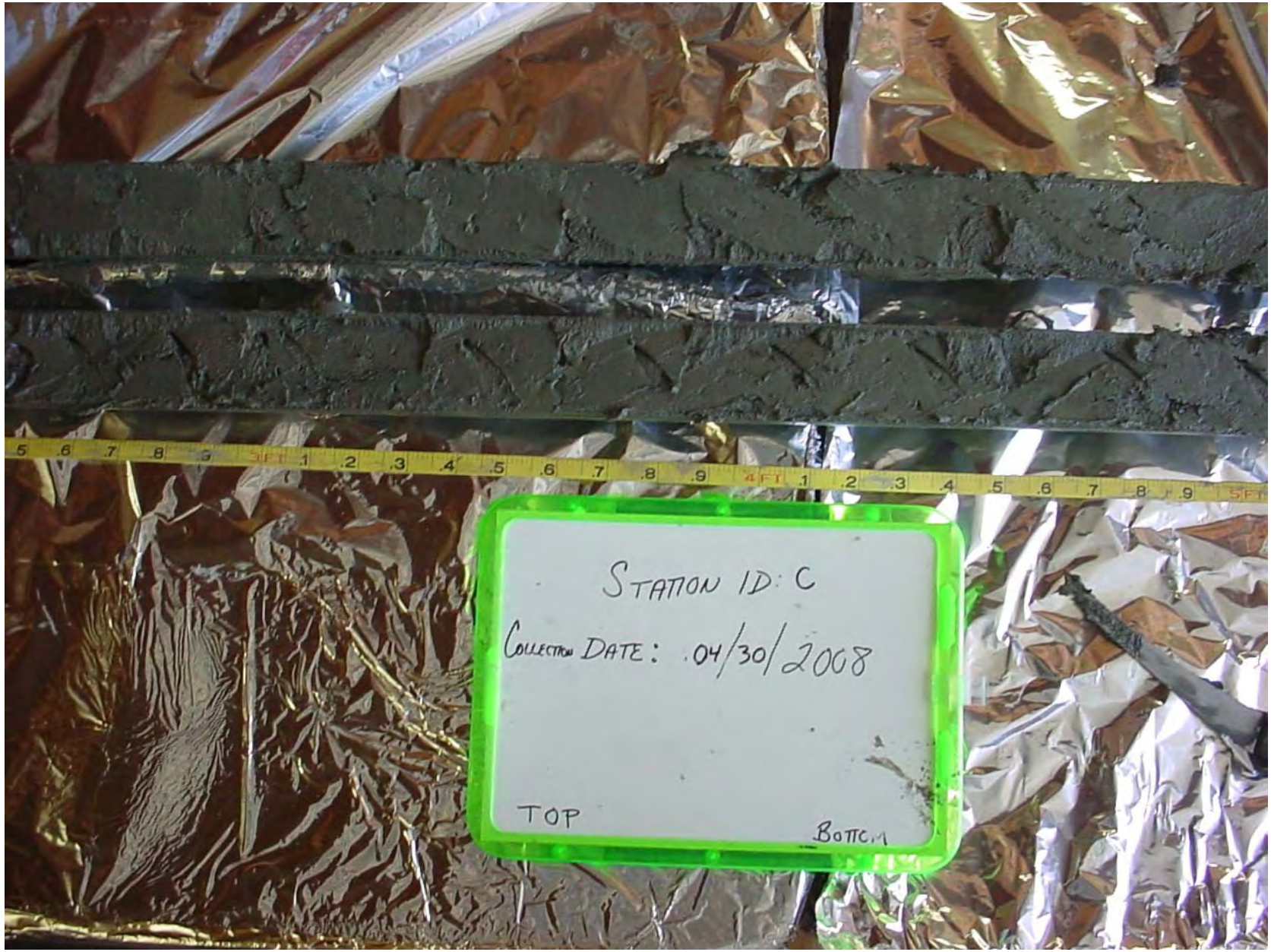
STATION ID: A
COLLECTION DATE: 05/01/2008
TOP
BOTTOM


STATION ID B
COLLECTION DATE: 04/30/2008
TOP
BOTTOM


STATION ID: B
COLLECTION DATE: 04/30/2008
TOP
BOTTOM


STATION ID: B
COLLECTION DATE: 04/30/2008
TOP
BOTTOM

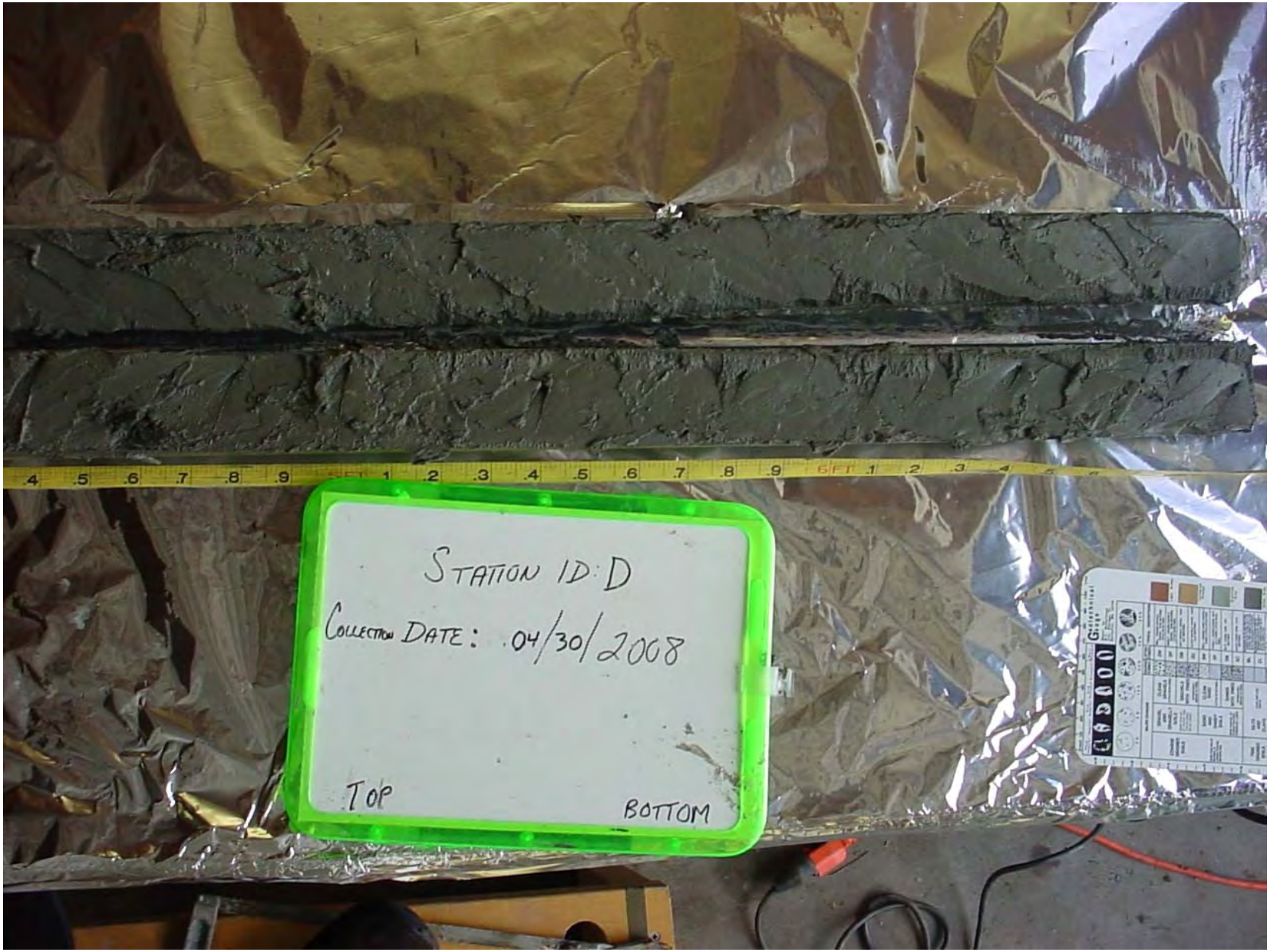

STATION ID: C
COLLECTION DATE: 04/30/2008
TOP
BOTTOM


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


STATION ID: D
COLLECTION DATE: 04/30/2008
TOP
BOTTOM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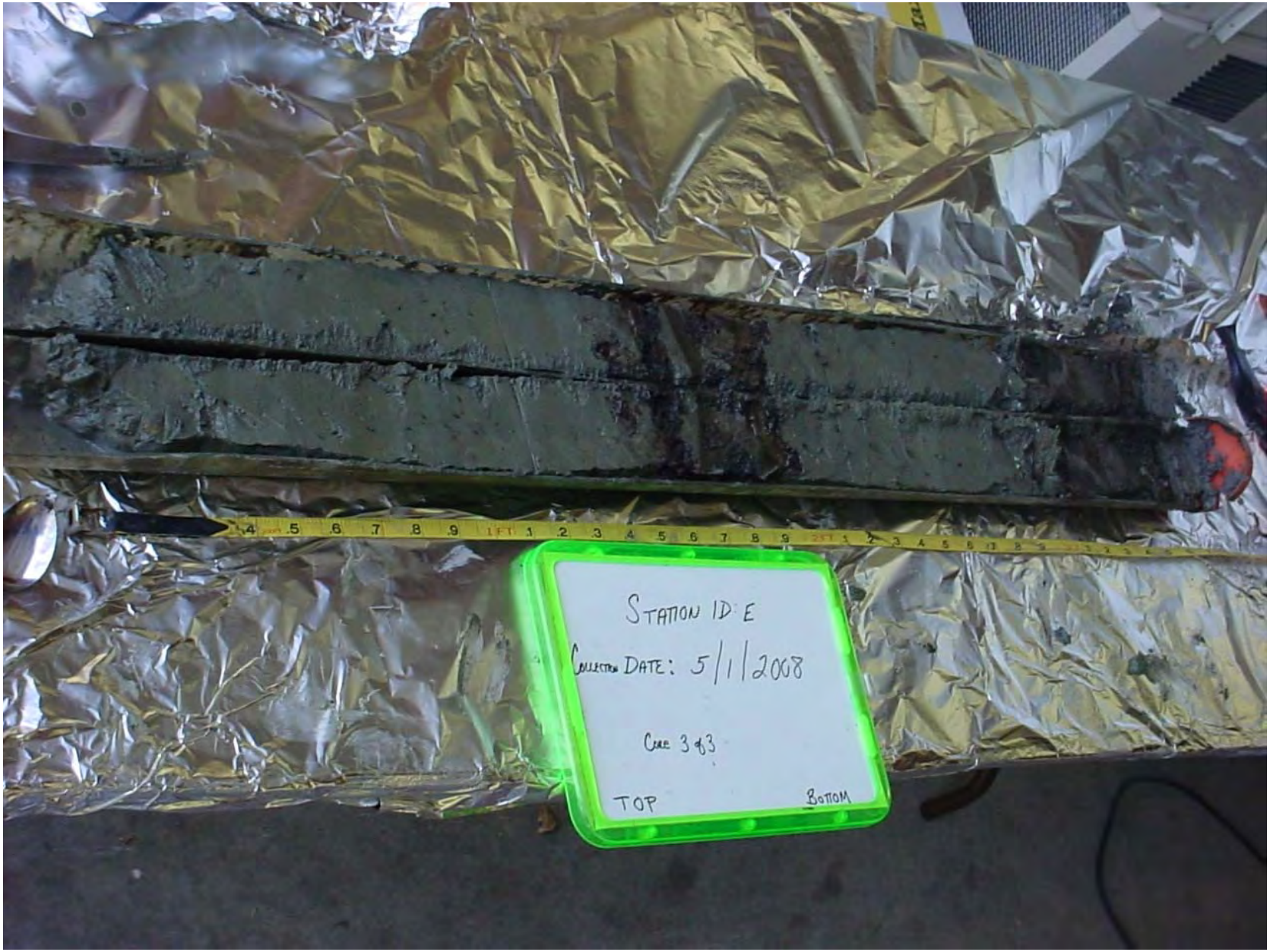
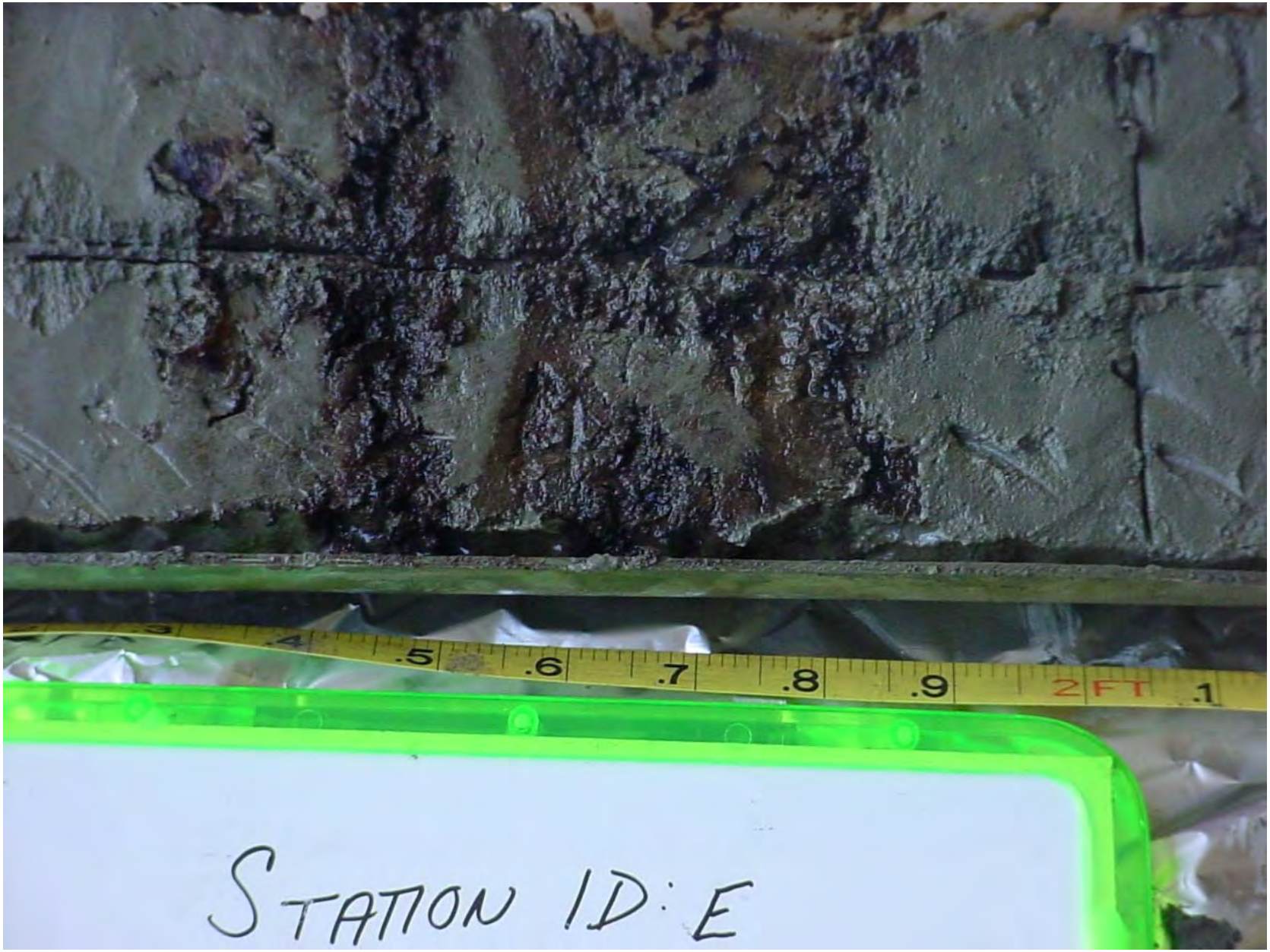
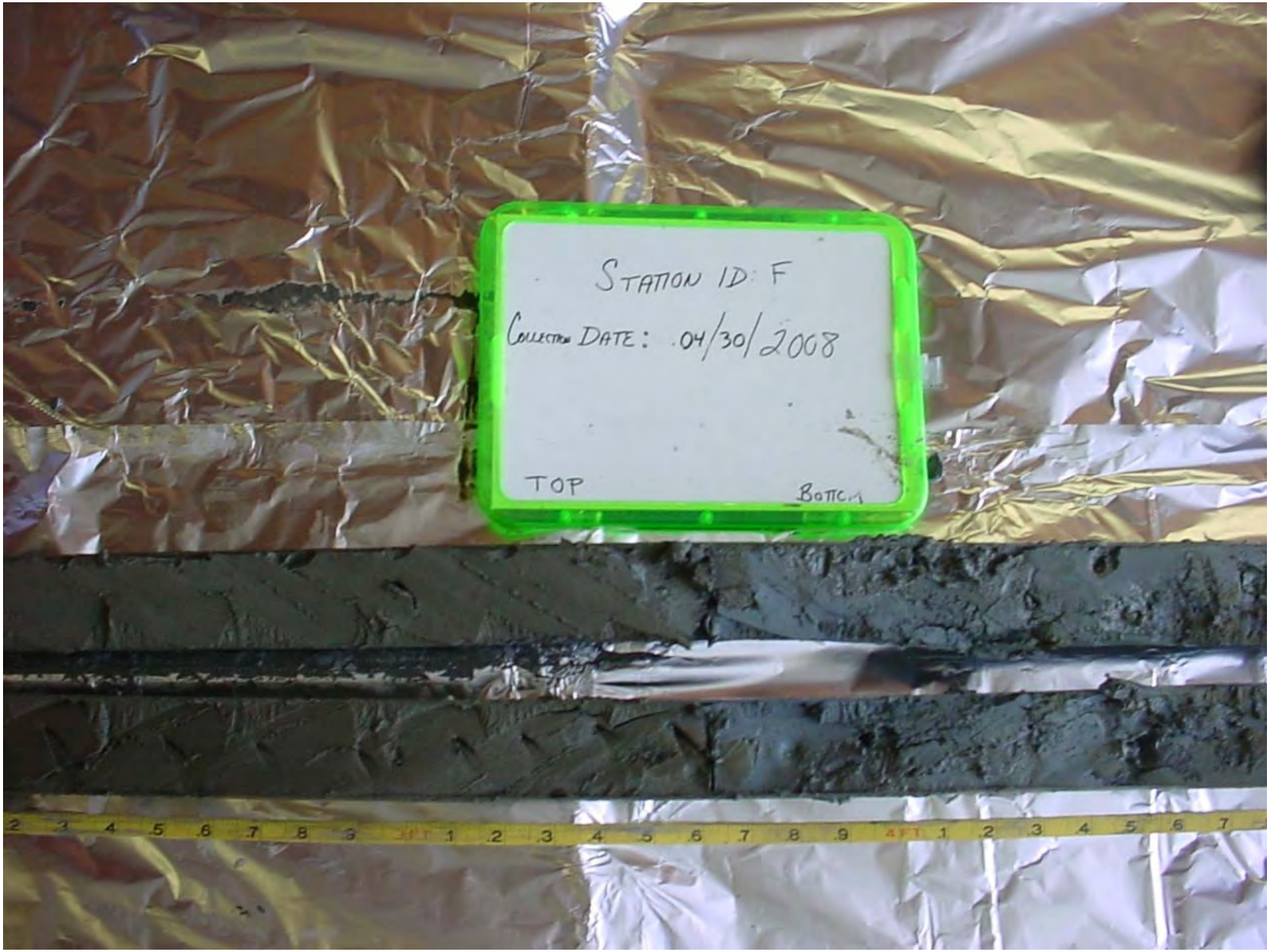
COLLECTION DATE: 04/30/2008
TOP
BOTTOM


STATION ID: E
COLLECTION DATE: 5/1/2008
CORE 3 of 3
TOP
BOTTOM


.5
.6
.7
.8
.9
2 FT
.1
STATION ID: E


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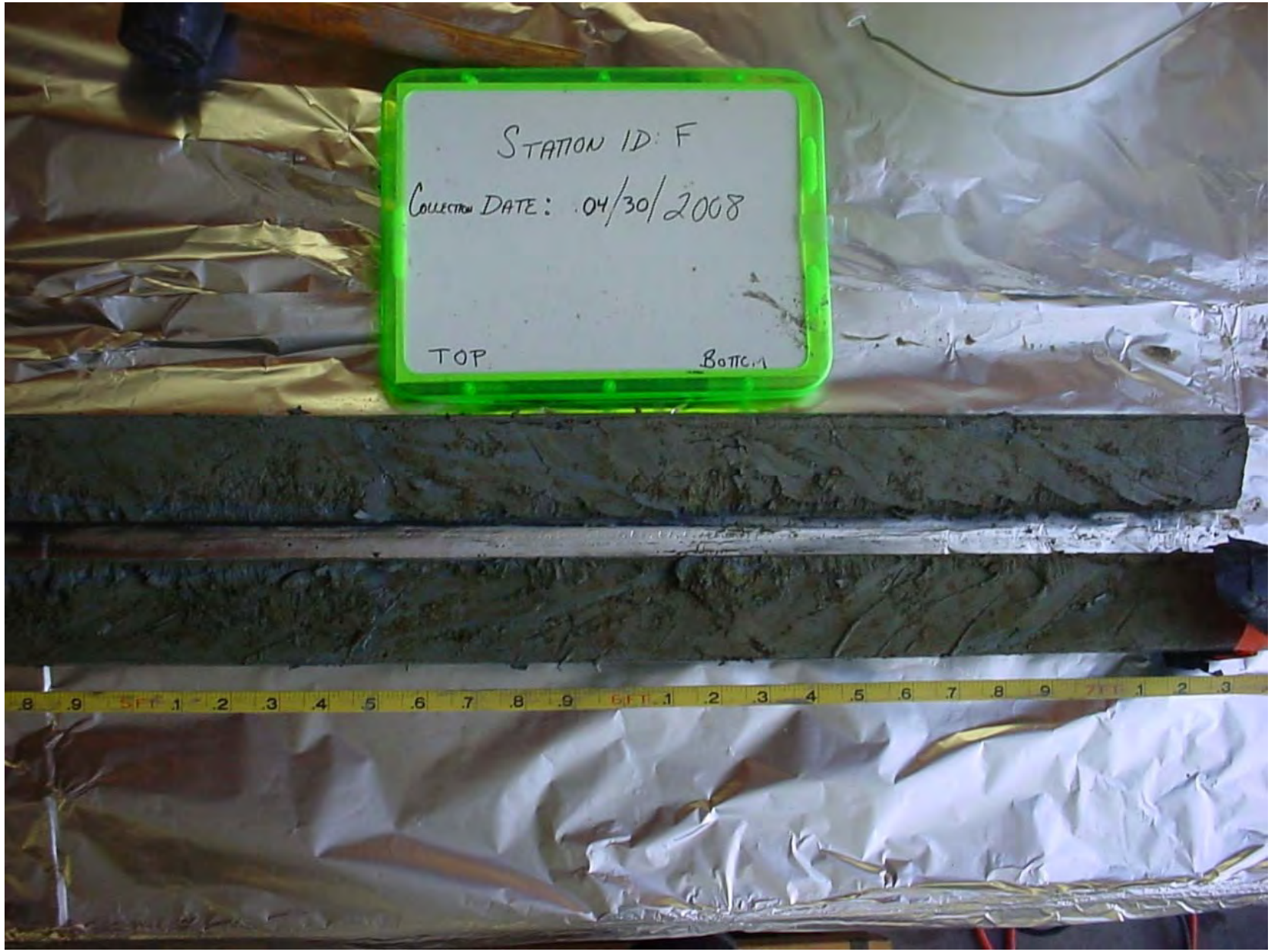
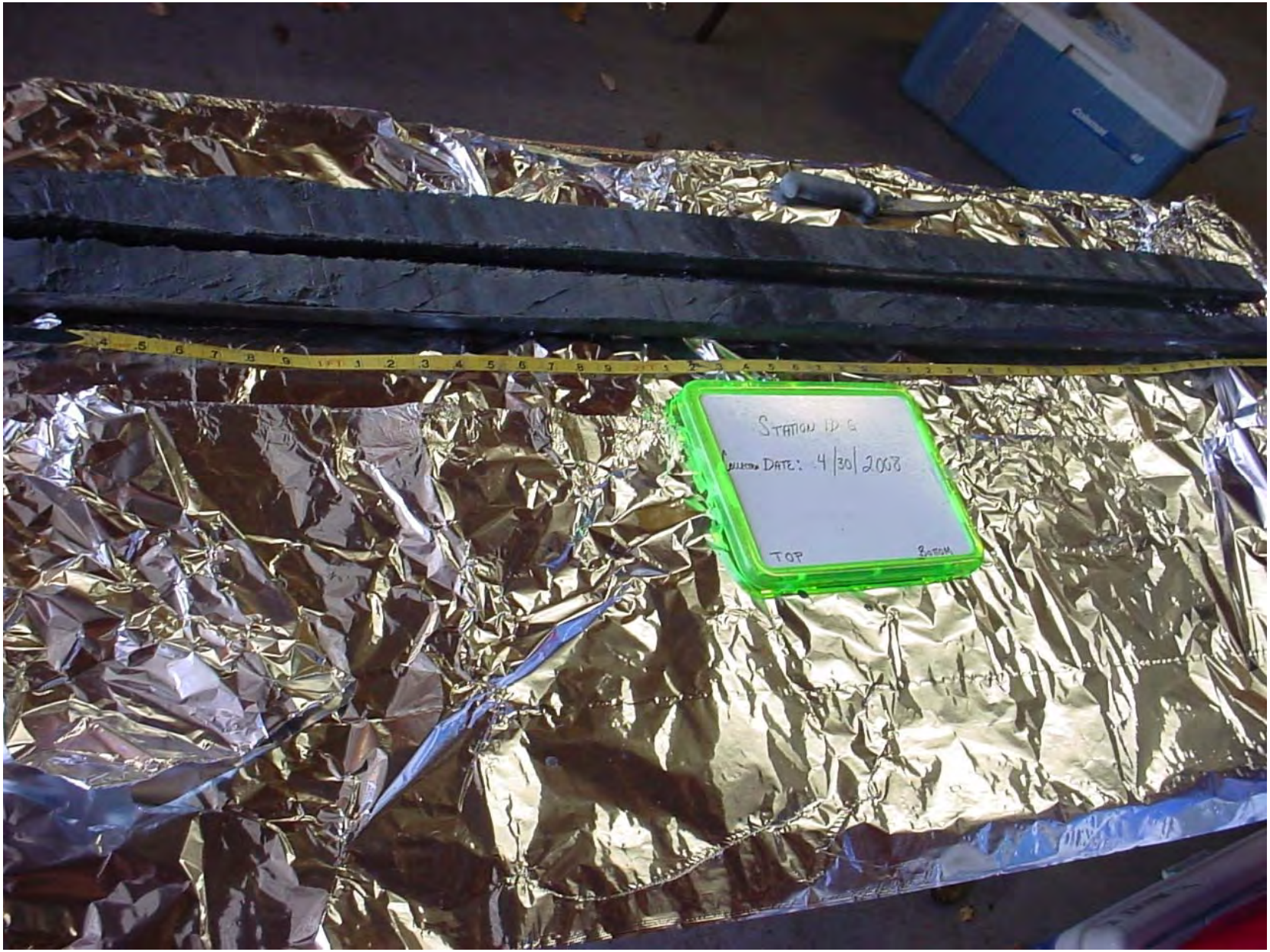
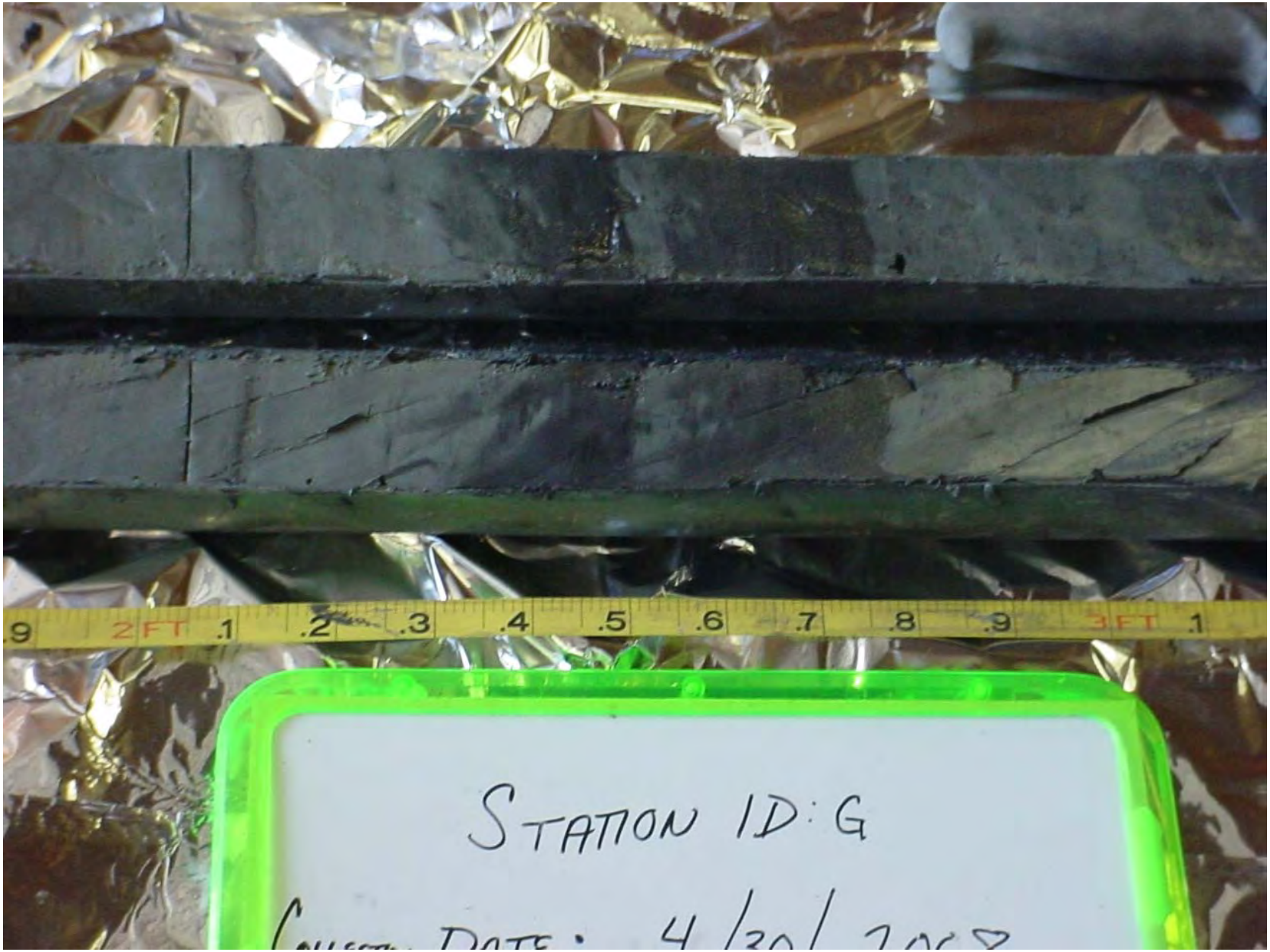
COLLECTION DATE: 04/30/2008
TOP
BOTTOM


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


STATION ID: 6
DATE: 4/30/2008
TOP
BOTTOM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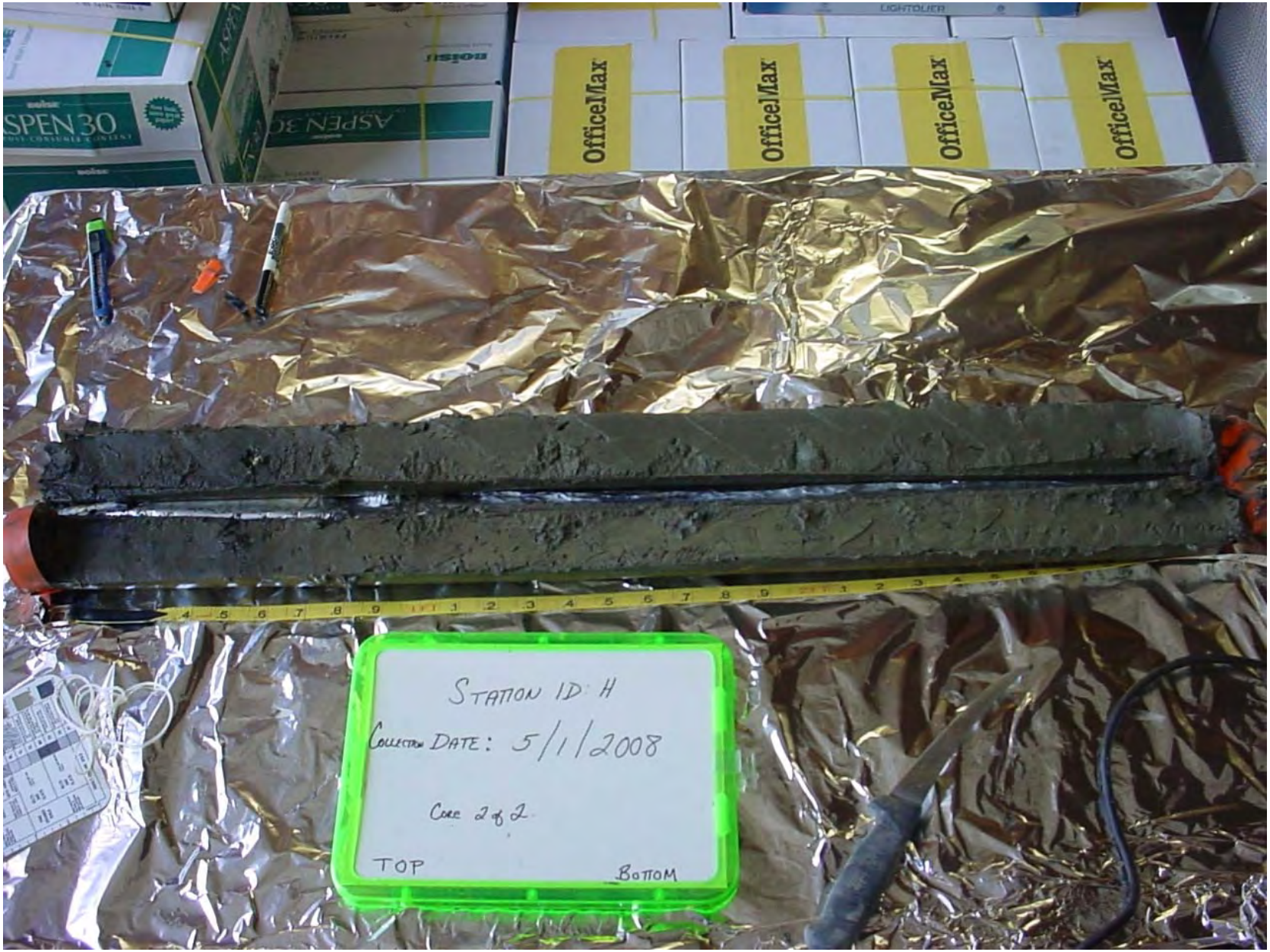
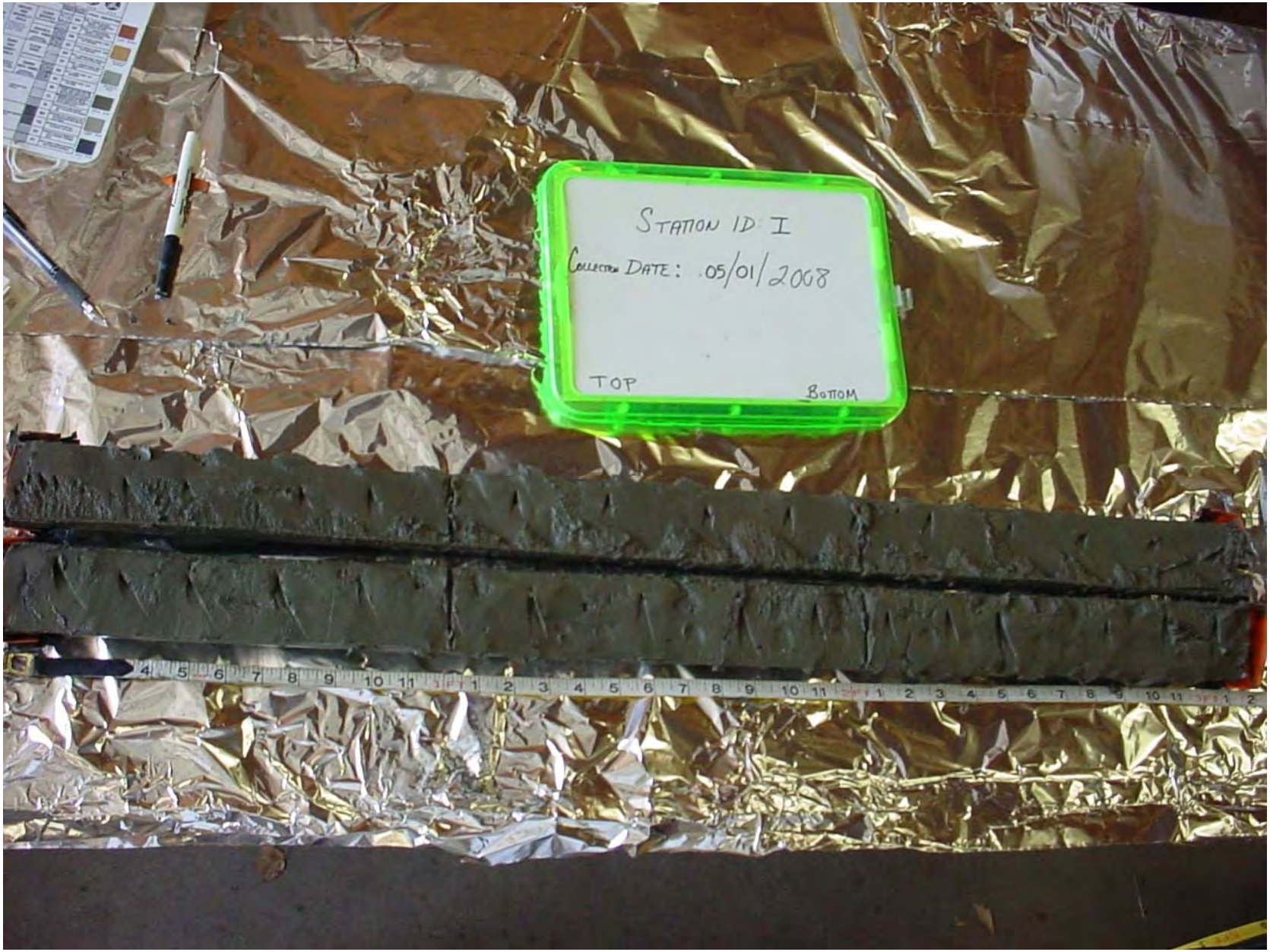

OfficeMax
OfficeMax
OfficeMax
OfficeMax
STATION ID: H
COLLECTION DATE: 5/1/2008
CORE 2 of 2
TOP
BOTTOM


STATION ID: I
COLLECTION DATE: 05/01/2008
TOP
BOTTOM


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: _____ Date: 04/29/08

Representing (Print): Battelle
Company Name

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

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 Reay

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

Representing (Print): TG+B
Company Name

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 Walkian

Signature: _____ Date: 5/1/08

Representing (Print): TG&B
Company Name

Site Safety and Health Plan Pre-Entry Briefing Attendance Form

Vibracore Sampling

Briefing Conducted By: Mike McKee

Date Performed: 04/30/08

Printed Name	Signature	Representing
JOHN F SCANLON		T&B
MARK AVAKIAN		T&B
Lee Poore		T&D

Site Safety and Health Plan Pre-Entry Briefing Attendance Form — Sediment Grab Sampling

Briefing Conducted By: Mike McKee

Date Performed: 05/02/08

Printed Name	Signature	Representing
John Peters		T&B
John Scanlon		T&B
Robert Bernstein		Woodfish

APPENDIX G
CHAIN OF CUSTODY FORMS

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Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor

SAMPLERS: Signature

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
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	12:26		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 ①		HAC-007	Station G vibracore sample (5.3')											1
05/01/08	~~16:18~~ 15:08/15:18		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	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: ① MPM 05/12/08 – military time incorrectly logged on core sampling log

ORIGINAL

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor

SAMPLERS: Signature

DATE	TIME	BATTELLE ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"											
05/02/08	08:28		HAC-012	Belfast Bay Disposal Site Sed Grab (3.56al) 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
			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:

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The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G60641	Searsport Harbor

SAMPLERS: Signature

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 (Hand 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~~ ①		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

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	05/06/08 1700	In Storage @ Battelle Duxbury	05/06/08 1700
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
① s/b 4/30/08

ORIGINAL

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G-606441	Searsport Harbor

SAMPLERS: Signature

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 (held for compositing)											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

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	05/06/08 17:00	In storage @ Battelle Duxbury	05/06/08 17:00
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Battelle
The Business of Innovation

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

Chain of Custody

Proj. No	Proj. Name
G606441	Seaspot Harbor

SAMPLERS: Signature

JMT, MPM, ACM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

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	①15:18	HAC-005 1-2		station H											1
5/1/08	~~15:18~~	HAC-005 0-1		station H											1
5/2/08	08:28	HAC-012		PSDS reference								✓			1
	08:49	HAC-013		↓								✓			1
	09:05	HAC-014		↓								✓			1
	09:50	HAC-015		↓								✓			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
4/30/08	09:50	HAC-007 0-1'		station G								✓			1
4/30/08	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 J								✓			1
5/1/08	08:58	HAC-010 1-2'		station J								✓			1
5/1/08	11:12	HAC-001 0-1'		station A											1

Relinquished by:	Date/Time	Received by:	Date/Time
Mark P. McManus	05/06/08 16:10		
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

Ref:
Dep: 3196

Date: 05/06/2008
Wgt: 52.0 LBS
DV: 0.00

SHIPPING: 48.74
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 48.74

Svcs: PRIORITY OVERNIGHT
TRCK: 9572 3375 8598

① MPM 05/12/08 – military time incorrectly logged on core sampling log

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G60641	Sea Spat Harbor

SAMPLERS: Signature

JMF, MPM, AEM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

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								1			1
4/30/08	12:26	HAC-003-0'-1'		station C								1			1
4/30/08	12:26	HAC-003-1'-2'		station C								1			1
4/30/08	11:30	HAC-006-0-1.9'		station E								1			1
4/30/08	11:30	HAC-006-1.9'-3.6'		station E								1			1
4/30/08	11:30	HAC-006-3.6'-7.3'		station E								1			1
4/30/08	15:25	HAC-002-0-1'		station B								1			1
4/30/08	15:25	HAC-002-1'-2'		station B								1			1
4/30/08	10:55	HAC-004-0-1'		station D								1			1
4/30/08	10:55	HAC-004-1'-2'		station D								1			1

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	05/06/08 16:10		
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

CLIENT COPY

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The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor

SAMPLERS: Signature

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		HAC-011	vibracore catcher rinsate blank							✓		✓		1
05/02/08	11:00		HAC-018	sediment grab rinsate blank							✓		✓		1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	05/06/08 11:30		5/6/08 1130
Relinquished by:	Date/Time	Received by:	Date/Time
	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

NT COPY

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor

SAMPLERS: Signature: Michael P Nelson

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	vibracore catcher rinsate blank	✓	✓		✓							1
05/02/08	11:00	Q2812	HAC-018	Sediment grab rinsate blank	✓	✓		✓							1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P Nelson	05/06/08 11:30	Jeannine Seyfert	5/6/08 11:35
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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	500 ml	5/14/08 JMF
HAC-001 1-2'	A	500 ml	
HAC-001-0-1'	A	500 ml	
HAC-002-0-1'	B	500 ml	
HAC-002-1-2'	B	500 ml	
HAC-003-0-1'	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. Nardi 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-006-0-1.9'	F	↓	↓
HAC-006 1.9-3.6'	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		AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA	HAC-020	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: [signature] 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'	D & 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
__V__ ~~in an epoxy-coated mixer~~ bucket w/ hand mixer

D 5/8 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	~~X~~	AMS
B	TOC	125 ml (4oz) I-chem wide-mouth jar	¾ full	NA	HAC-021	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	~~X~~	AMS

* Store at -20° C
** Store at 4° C, do not freeze.

Reviewed By: _____ 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	HAC-022	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 Date: 05/14/08

Custody Records

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Battelle
The Business of Innovation

ShpNo SHP-080520-01

Battelle Project No:

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:**

Battelle
The Business of Innovation

ShpNo SHP-080520-01

Battelle Project No:

Sample Receipt Form Details

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

Deliver to: Battelle Duxbury Chem Lab

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

Battelle
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Chain of Custody

Proj. No	Proj. Name
G606441	Searsport Harbor ME

SAMPLERS: Signature

JMF + AEM

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/2/08	0828	HAC-012	Q2888	Reference Sediment BBDS	✓	✓		✓							1
	0849	HAC-013	Q2889		✓	✓		✓							1
	0905	HAC-014	Q2890		✓	✓		✓							1
	0950	HAC-015	Q2891	IDS	✓	✓		✓							1
	1005	HAC-016	Q2892		✓	✓		✓							1
	1020	HAC-017	Q2893		✓	✓		✓							1
4/30/08	1226	HAC-019	Q2894	Composite 1 Sediment from Station A,B,C	✓	✓		✓							1
	1055	HAC-020	Q2895	2 D+F	✓	✓		✓							1
	0950	HAC-021	Q2896	3 E,G,H,I	✓	✓		✓							1
5/1/08	0858	HAC-022	Q2897	4 J	✓	✓		✓							1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
Jessica M Fahey	5/15/08 0900	Jeannine Seyfert	5/15/08 0900
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor

SAMPLERS: Signature: Michael P Nelson

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	vibracore catcher rinsate blank	✓	✓		✓							1
05/02/08	11:00	Q2812	HAC-018	Sediment grab rinsate blank	✓	✓		✓							1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P Nelson	05/06/08 11:30	Jeannine Seyfert	5/6/08 11:35
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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Chain of Custody

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

Proj. No	Proj. Name
G606441	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	2891.1	HAC-011	vibracore catcher rinsate blank							✓		✓		1
05/02/08	11:00	2891.2	HAC-018	sediment grab rinsate blank							✓		✓		1

Relinquished by:	Date/Time	Received by:	Date/Time
	05/06/08 11:30		5/6/08 1130
Relinquished by:	Date/Time	Received by:	Date/Time
	5/6/08 1230		05/08/08 1244

Comments:

ORIGINAL

cc: Project Manager/Central File
Login File 2891

SAMPLE LOGIN

(SOP# MSL-A-001)

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

VOA 517168

LOG-IN CHECKLIST 2891 Searsport Harbor

Reference SOP# MSL-A-001

Central File #: New Sample No(s): 1 - 2 Project Manager: JMS

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

Matrix: DI water WP# W.84814

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
	N/A		Was a custody seal present?
		N/A	Was the custody seal intact?
N/A			Was cooler(s) temperature(s) within acceptable range of 4±2°C or frozen? (if multiple coolers, note temp. of each) 5.0 °C ____ °C
		N/A	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy:
N/A			Were all chain of custody forms signed and dated?
	N/A		Were samples filtered at MSL?

Sample condition(s): (Acceptable) Other (explain):

Container type: (Teflon) Poly Glass Spex Other:

Notes:

Completed By: [signature] Date/Time: 05/07/08 1244

N/A

SAMPLE PRESERVATION

- [ ] Sample(s) were preserved at MSL
- [N/A] Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- [N/A] 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: [signature] Date/Time: 05/07/08 1255

Revsed 033006

L-3-C

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Chain of Custody

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

Proj. No	Proj. Name
G606441	Seausport 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 Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
5/1/08	1618	HAC-008-1'-2'		station H								✓			1
5/1/08	1618	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
1/30/08	09:50	HAC-007 0'-1'		station G								✓			1
1/30/08	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 J								✓			1
5/1/08	08:58	HAC-010 1'-2'		station J								✓			1
5/1/08	11:12	HAC-001 0'-1'		station A											

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P. Mc	05/06/08 16:10	Stephanie CS Moore	5/7/08 9:45A
	Date/Time		Date/Time
Relinquished by:		Received by:	

Comments:

p 1 of 2

ORIGINAL

Battelle
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Chain of Custody

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

Proj. No	Proj. Name
G6C6441	Searspot Harbor

SAMPLERS: Signature

JMF, MPM, AEM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Grainsize	ACIDIFIED	PRESERVED	Total Number of Containers
5/1/08	11:12	HAC-ØØ1-1'-2'		station A								✓			1
4/30/08	12:26	HAC-ØØ3-0'-1'		station C								✓			1
4/30/08	12:26	HAC-ØØ3-1'-2'		station C								✓			1
4/30/08	11:30	HAC-ØØ6-0-1.9'		station F								✓			1
4/30/08	11:30	HAC-ØØ6-1.9'-3.6'		station F								✓			1
4/30/08	11:30	HAC-ØØ6-3.6'-7.3'		station F								✓			1
4/30/08	15:25	HAC-ØØ2-0-1'		station B								✓			1
4/30/08	15:25	HAC-ØØ2-1'-2'		station B								✓			1
4/30/08	10:55	HAC-ØØ4-0-1'		station D								✓			1
4/30/08	10:55	HAC-ØØ4-1-2'		station D											1

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

Comments:

p2of2

ORIGINAL

Ship to: HMS

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor, ME

SAMPLERS: Signature: JMF + AEM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TOC	ACIDIFIED	PRESERVED	Total Number of Containers
5/2/08	0828	HAC-012		Reference Sediment BBDS								✓			1
	0849	HAC-013										✓			1
	0905	HAC-014										✓			1
	0950	HAC-015		IDS								✓			1
	1005	HAC-016										✓			1
	1020	HAC-017										✓			1
4/30/08	1226	HAC-019		Composite 1 Sediment from Station A,B+C								✓			1
	1055	HAC-020		2 D+F								✓			1
	0950	HAC-021		3 E,G,H+I								✓			1
5/1/08	0858	HAC-022		4 J								✓			1
												✓			1 ①

Relinquished by:	Date/Time	Received by:	Date/Time
Jessi M Fay	5/15/08 1000	Jennifer D. Davis	05/16/08 9:25AM
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: ① Please ignore JMF 5/15/08

ORIGINAL

Ship to: Battelle Laptop

Battelle
The Business of Innovation

Chain of Custody

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

Proj. No	Proj. Name
G606441	Searsport Harbor, ME

SAMPLERS: Signature: JMF + AEM

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
5/2/08	~~08:28~~ 08:28①	HAC-012	2891.3	Reference Sediment BBDS							✓				1
5/2/08	08:49	HAC-013	4								✓				1
	09:03	HAC 014	5								✓				1
	0950	HAC-015	6	Reference Sediment IDS							✓				1
	10:05	HAC 016	7								✓				1
	1020	HAC-017	8								✓				1
4/30/08	12:26	HAC-019	9	Sediment from Station A, B, C							✓				1
	1055	HAC-020	10	Sediment from Station D, F							✓				1
	0950	HAC-021	11	Sediment from Station E & H							✓				1
5/1/08	0858	HAC-022	2891.12	Sediment from Station J							✓				1

Relinquished by:	Date/Time	Received by:	Date/Time
Jane M Jaffe	5/14/08 1600	[signature]	05/15/08 1400
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
① 5/8 08:28 time 5/1/08

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

VA 5/14/08

Central File #: 2891 Sample No(s): 3-12 Project 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
☐	NA	☐	Was a custody seal present?
☐	☐	NA	Was the custody seal intact?
NA	☐	☐	Was cooler(s) temperature(s) within acceptable range of 4±2°C or frozen? (if multiple coolers, note temp. of each) 4.4 °C _____ °C
☐	☐	NA	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy:
NA	☐	☐	Were all chain of custody forms signed and dated?
☐	NA	☐	Were samples filtered at MSL?

Sample condition(s): (Acceptable) Other (explain):

Container type: Teflon Poly Glass (Spex) Other:

Notes: _____

Completed By: _____ Date/Time: 05/15/08 1408

SAMPLE PRESERVATION

NA	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:
	NA	Refrigerate/Freeze	Notes: B-1
	☐	Other	Notes:

Completed By: _____ Date/Time: 05/15/08 1400

Revsed 033006

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ATTACHMENT C

SEDIMENT CHEMISTRY DATA

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Geotechnical Data

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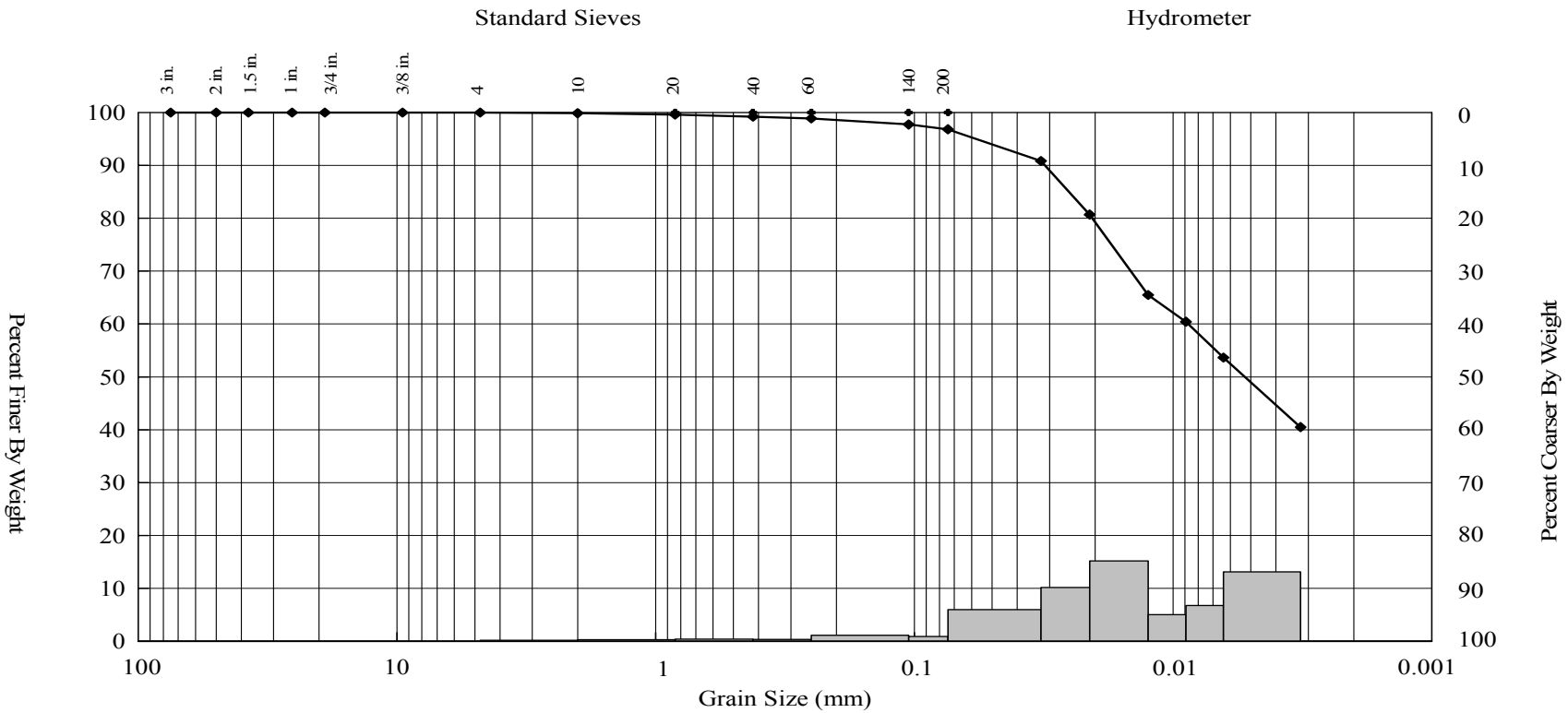
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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-008 1'-2'
AMS Sample ID:	8C8-1

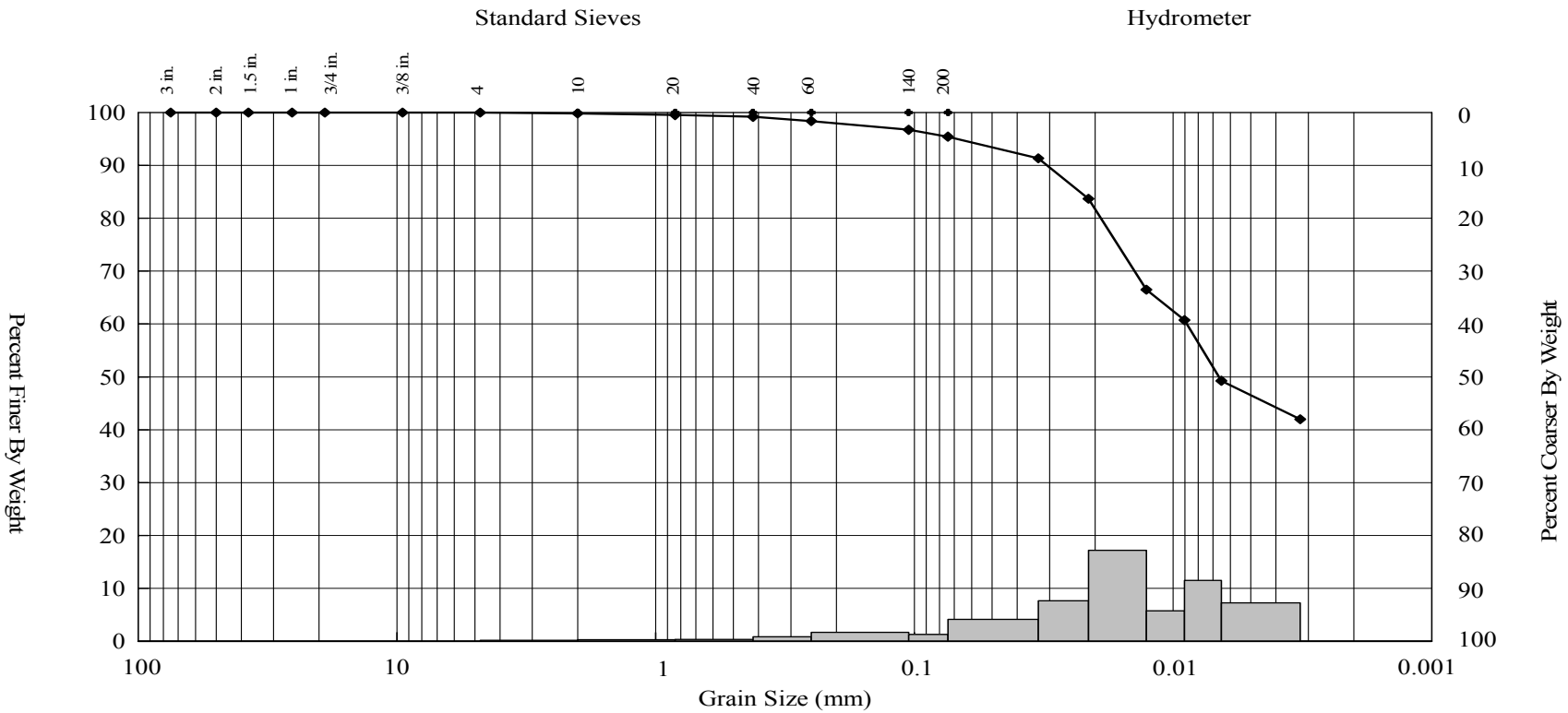
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

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 (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.19	0.61	3.77	49.48	45.95

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
114										

Material Description

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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-008 0'-1'
AMS Sample ID:	8C8-2

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Stephanie L.S. Moore
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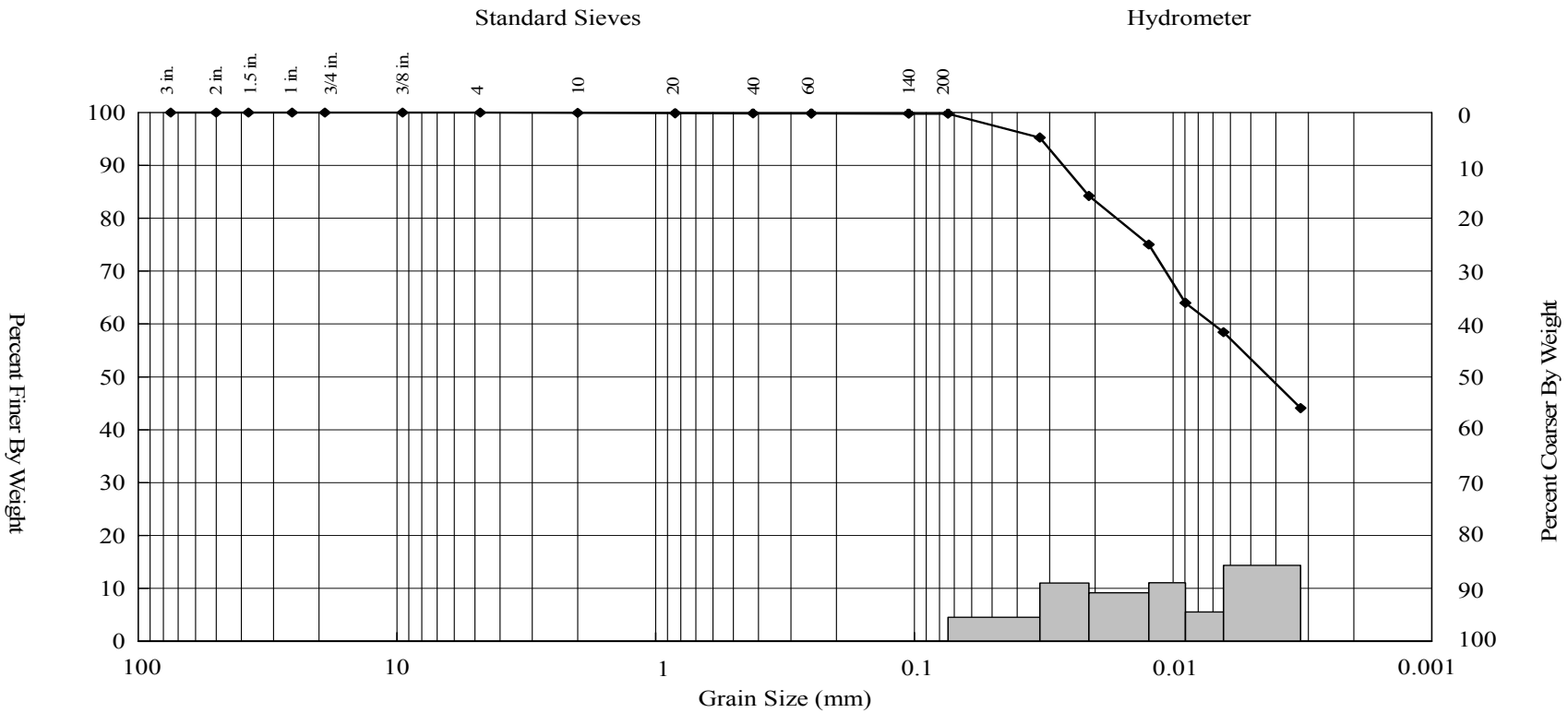
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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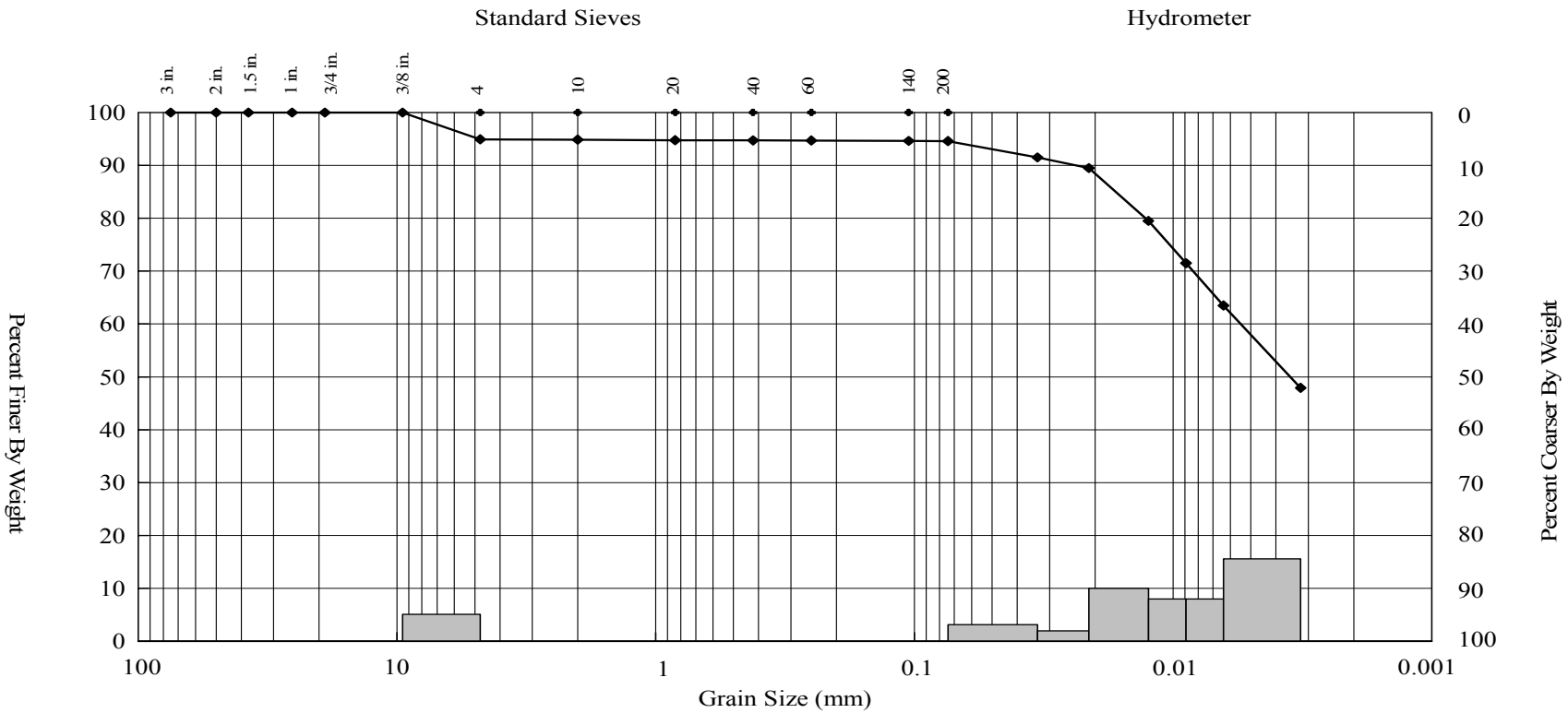
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
5.08	0.08	0.12	0.12	37.85	56.75

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)

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-013
AMS Sample ID:	8C8-4

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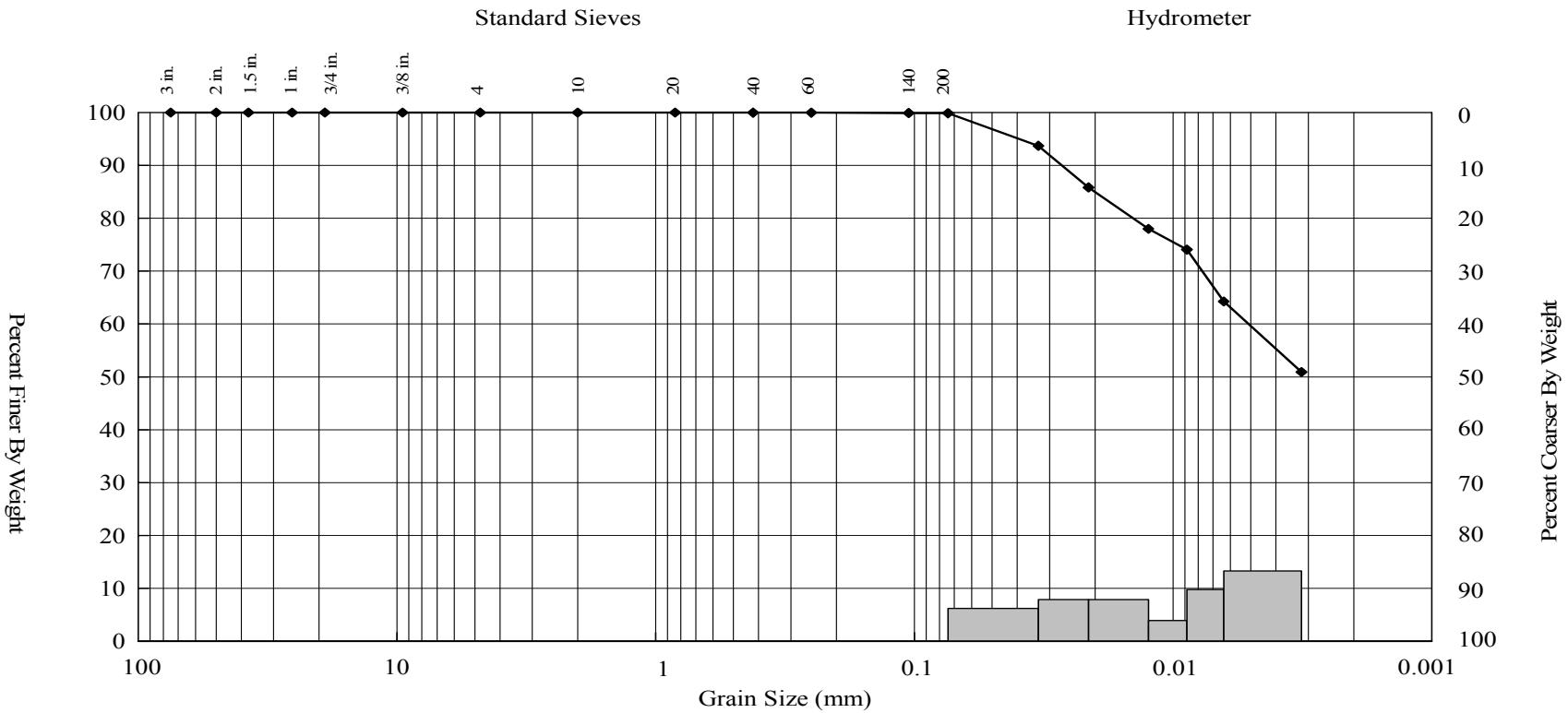
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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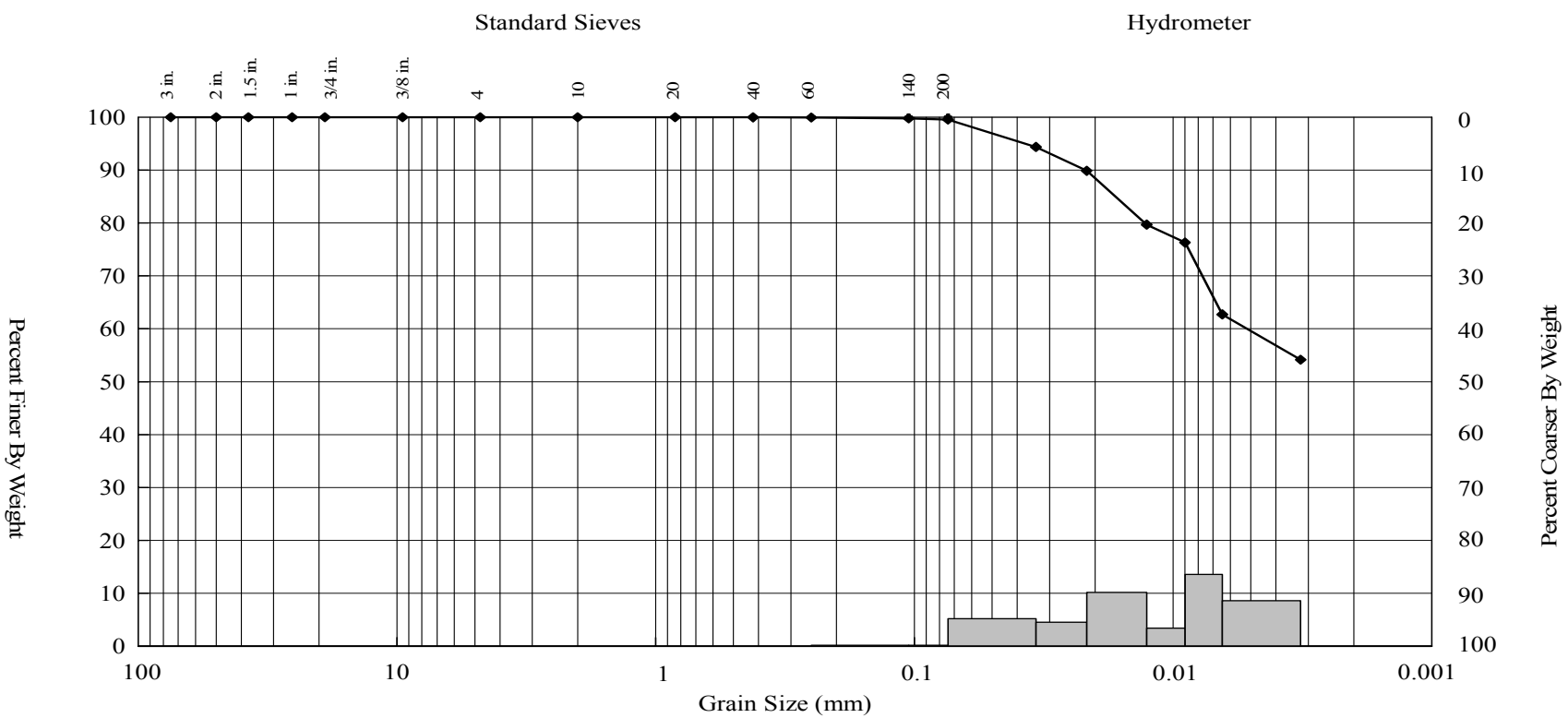
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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	C_u
174										

Material Description

Lean Clay ("CL"), dark greenish gray (10Y 4/1)

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

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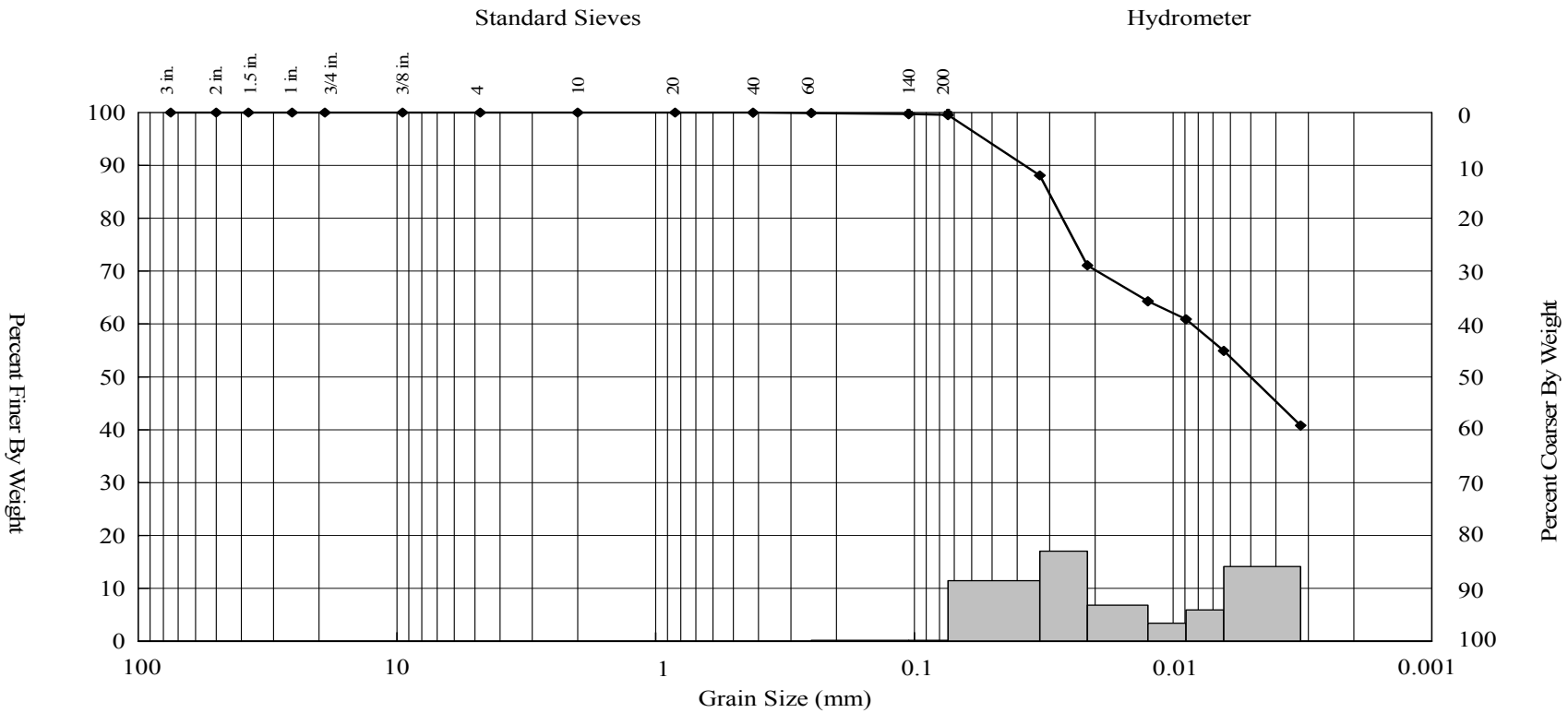
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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-016
AMS Sample ID:	8C8-7

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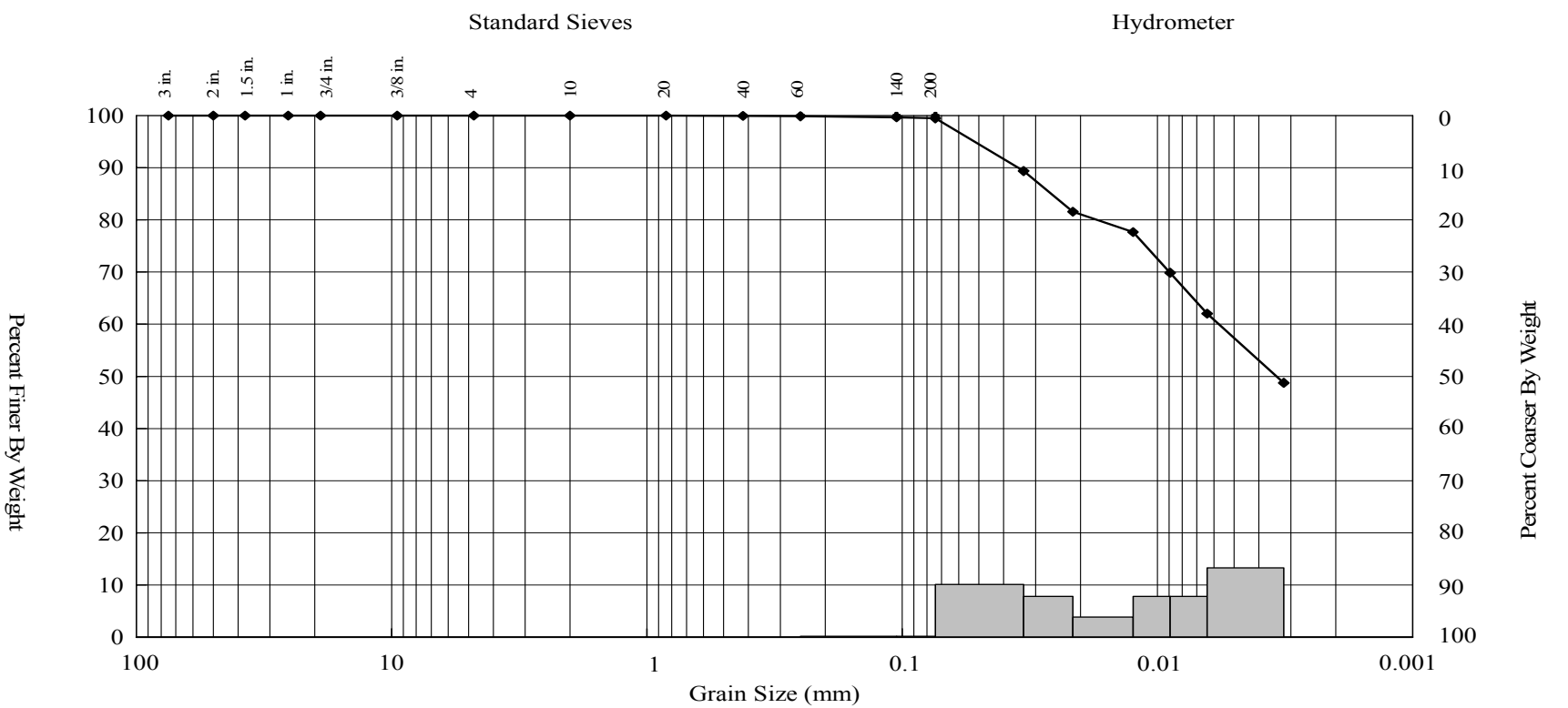
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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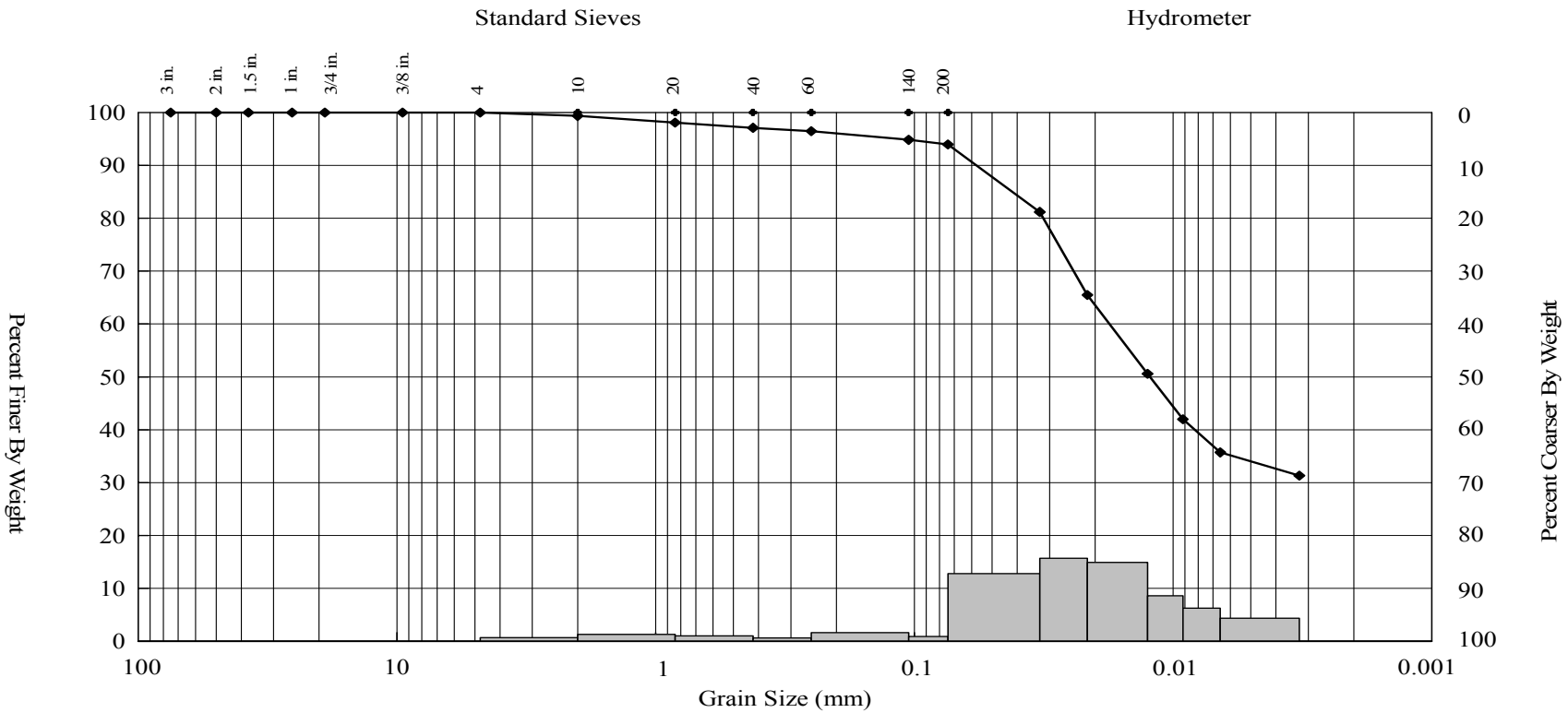

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.65	2.28	3.12	60.30	33.65

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)

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-005 0'-1'
AMS Sample ID:	8C8-9

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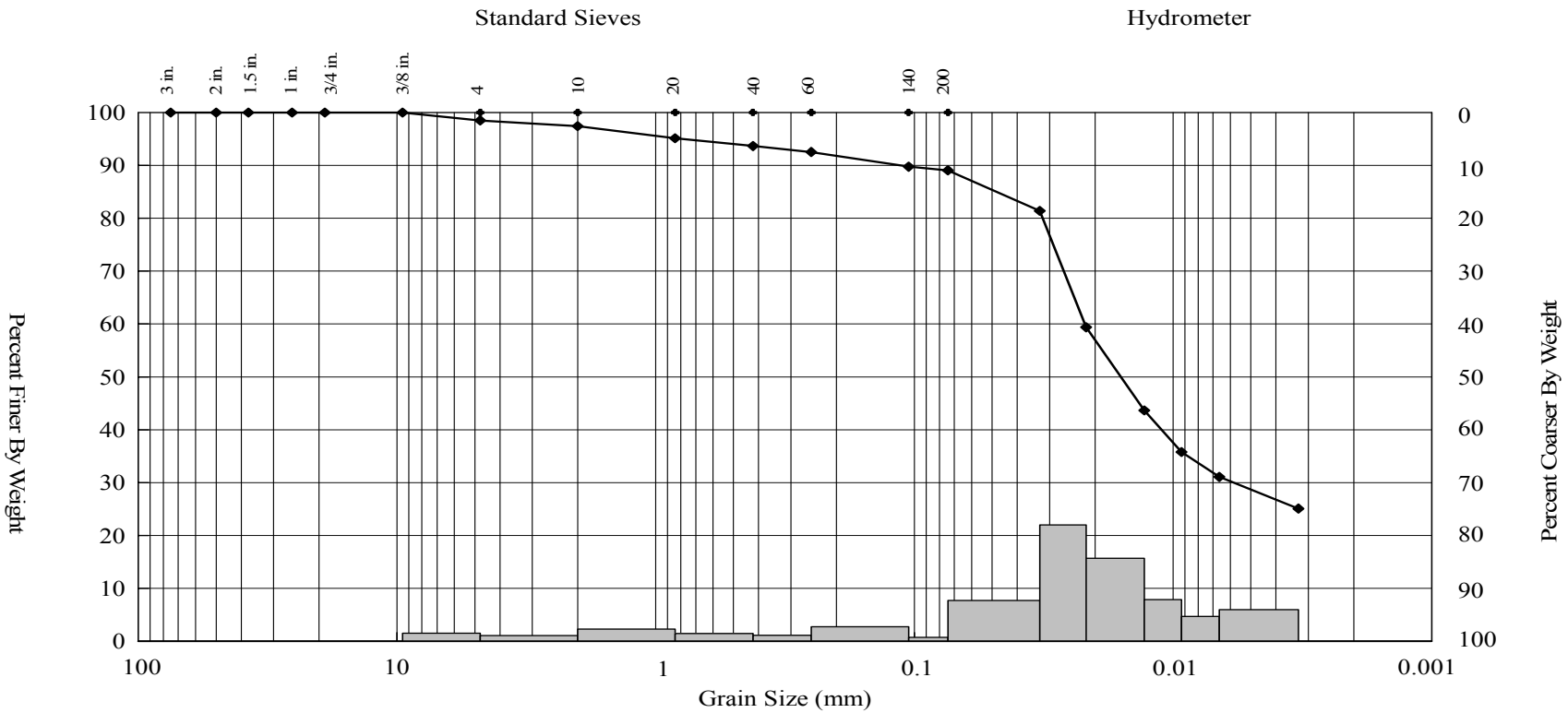
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
1.51	1.08	3.77	4.59	60.86	28.19

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)

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-005 1'-2'
AMS Sample ID:	8C8-10

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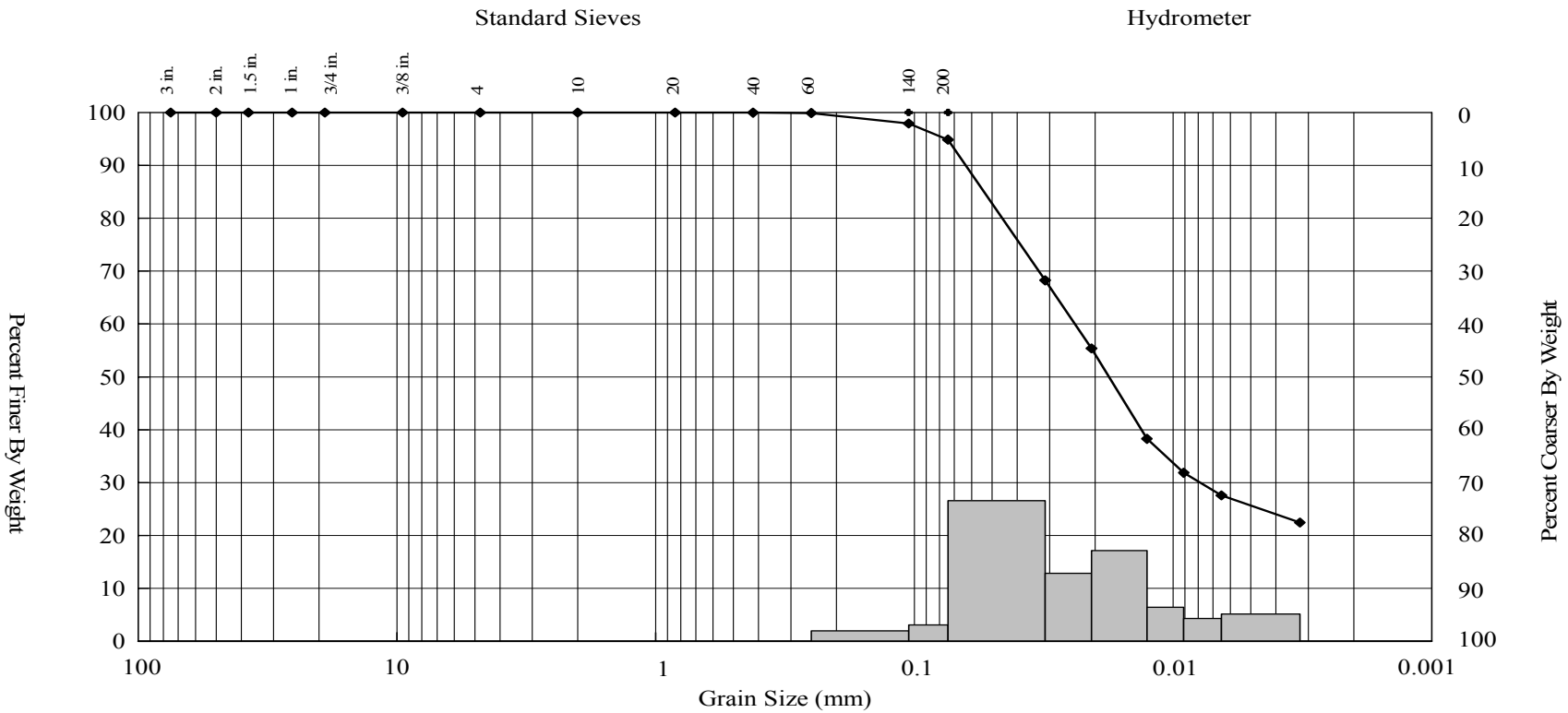
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Elastic Silt ("MH"), dark gray (N 4)

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-007 0'-1'
AMS Sample ID:	8C8-11

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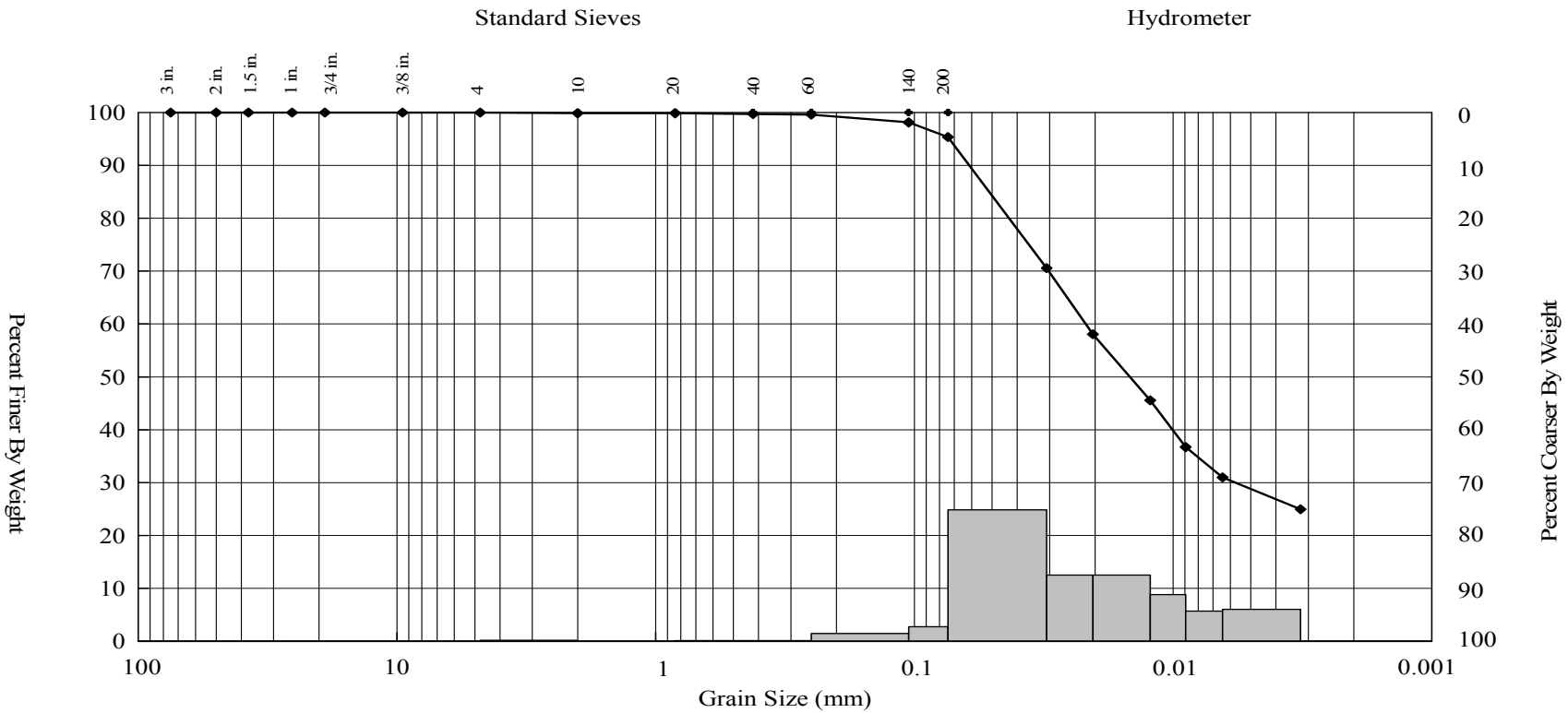
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.16	0.11	4.37	67.04	28.32

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)

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-007 1'-2'
AMS Sample ID:	8C8-12

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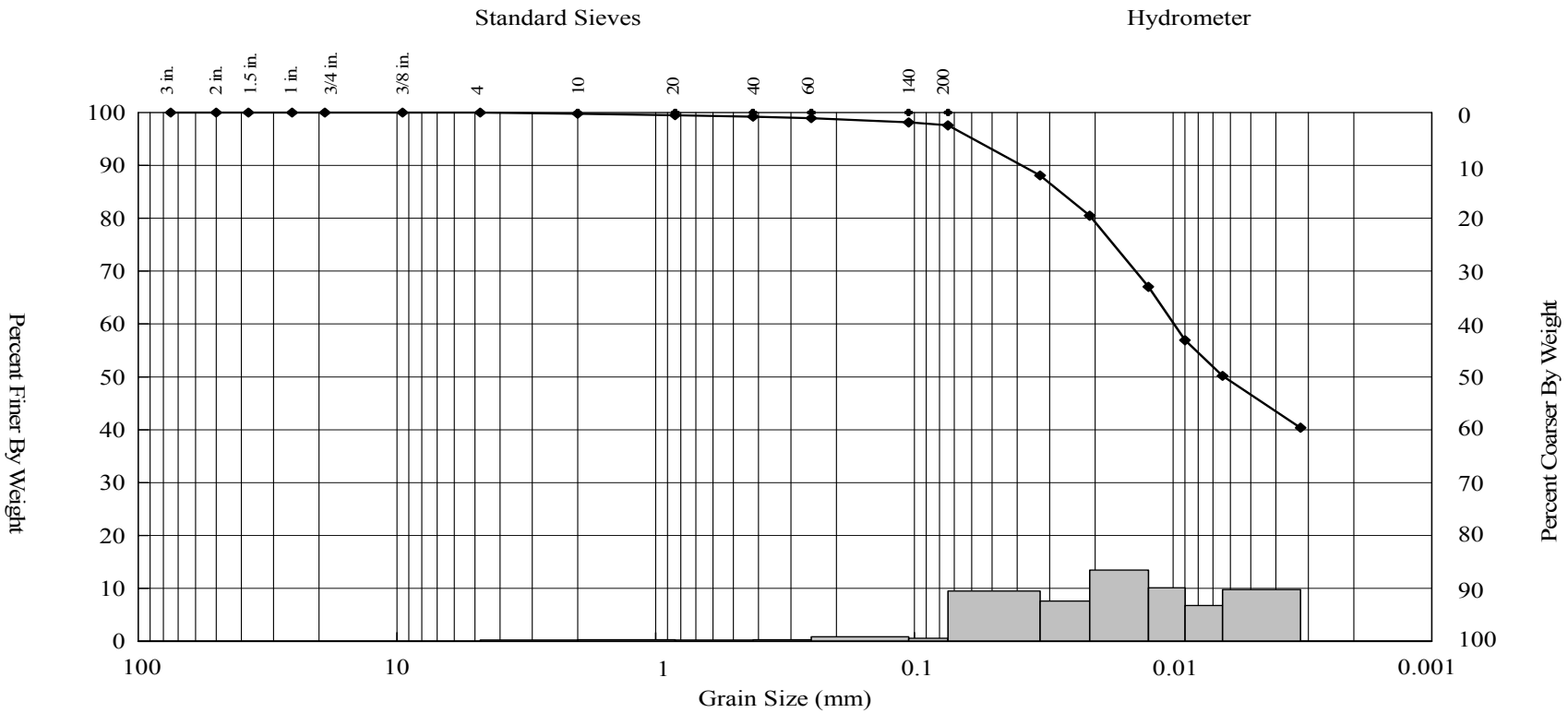

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.24	0.54	1.66	51.71	45.85

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
117										

Material Description

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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 0'-1'
AMS Sample ID:	8C8-13

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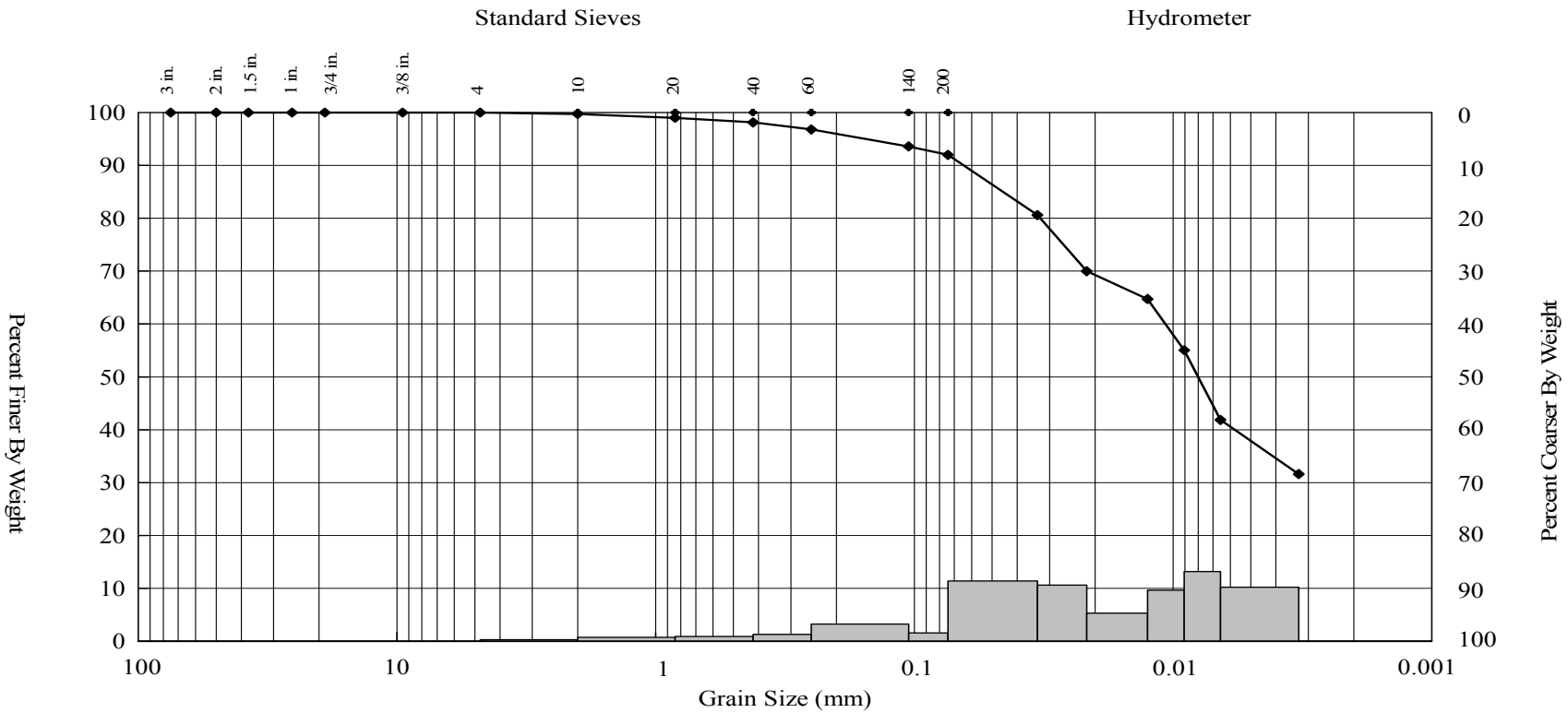
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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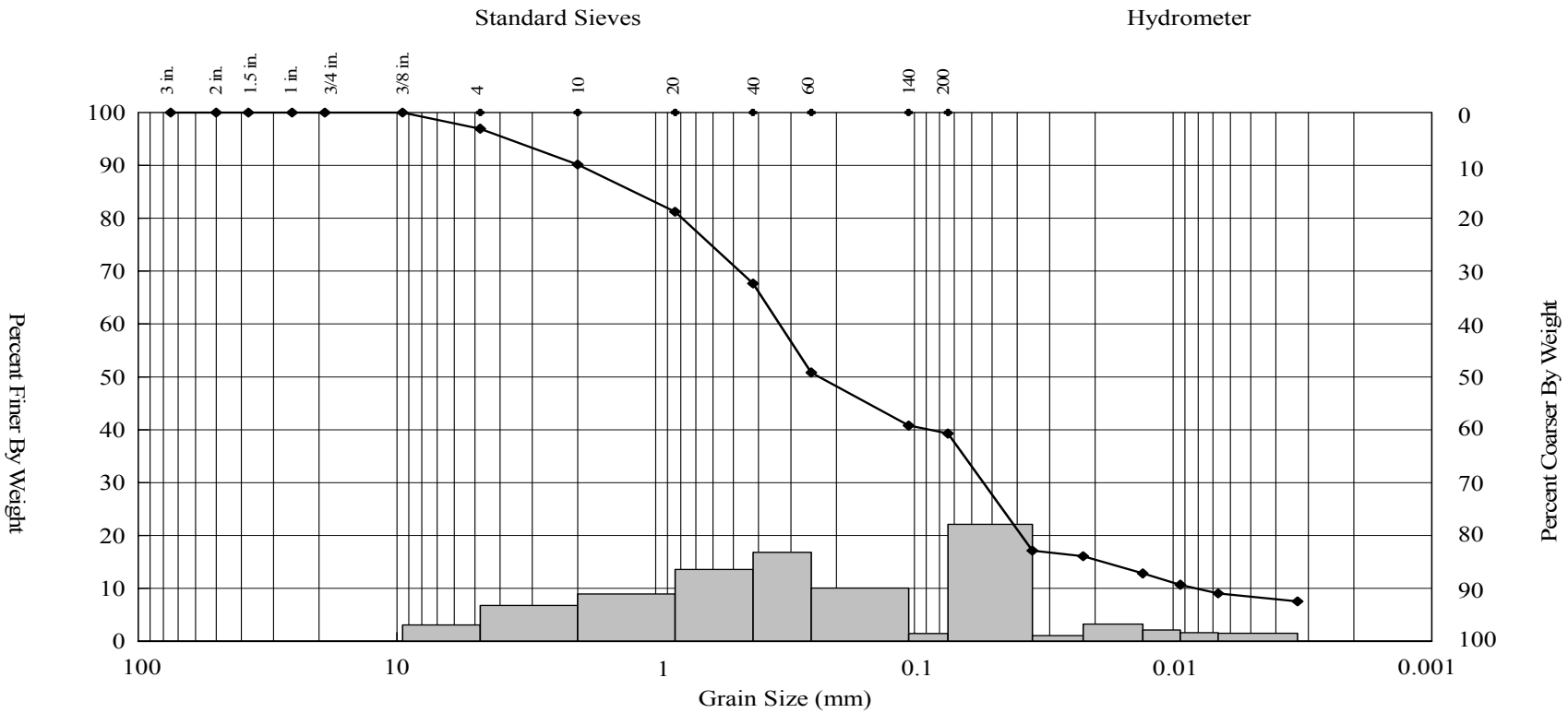
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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 0'-1'
AMS Sample ID:	8C8-15

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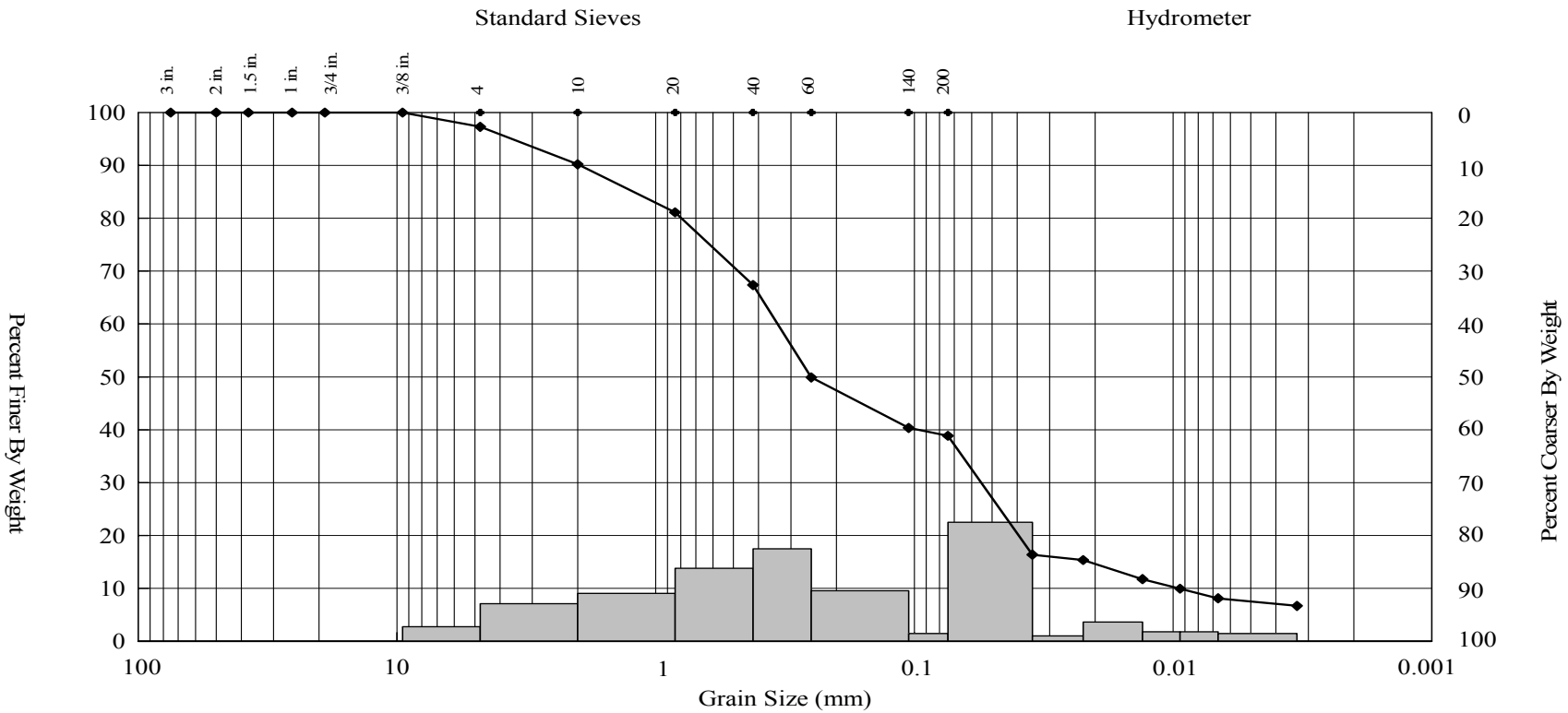
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Silty Sand ("SM"), dark greenish gray (10Y 4/1)

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 0'-1'
AMS Sample ID:	8C8-15Q

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Title:	Searsport Harbor	Date Sampled:	5/1/2008
Project Number:	G606441	Date Analyzed:	5/8/2008
Client Sample ID:	HAC-010 0'-1'	Matrix:	Sediment
AMS Sample ID:	8C8-15	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).

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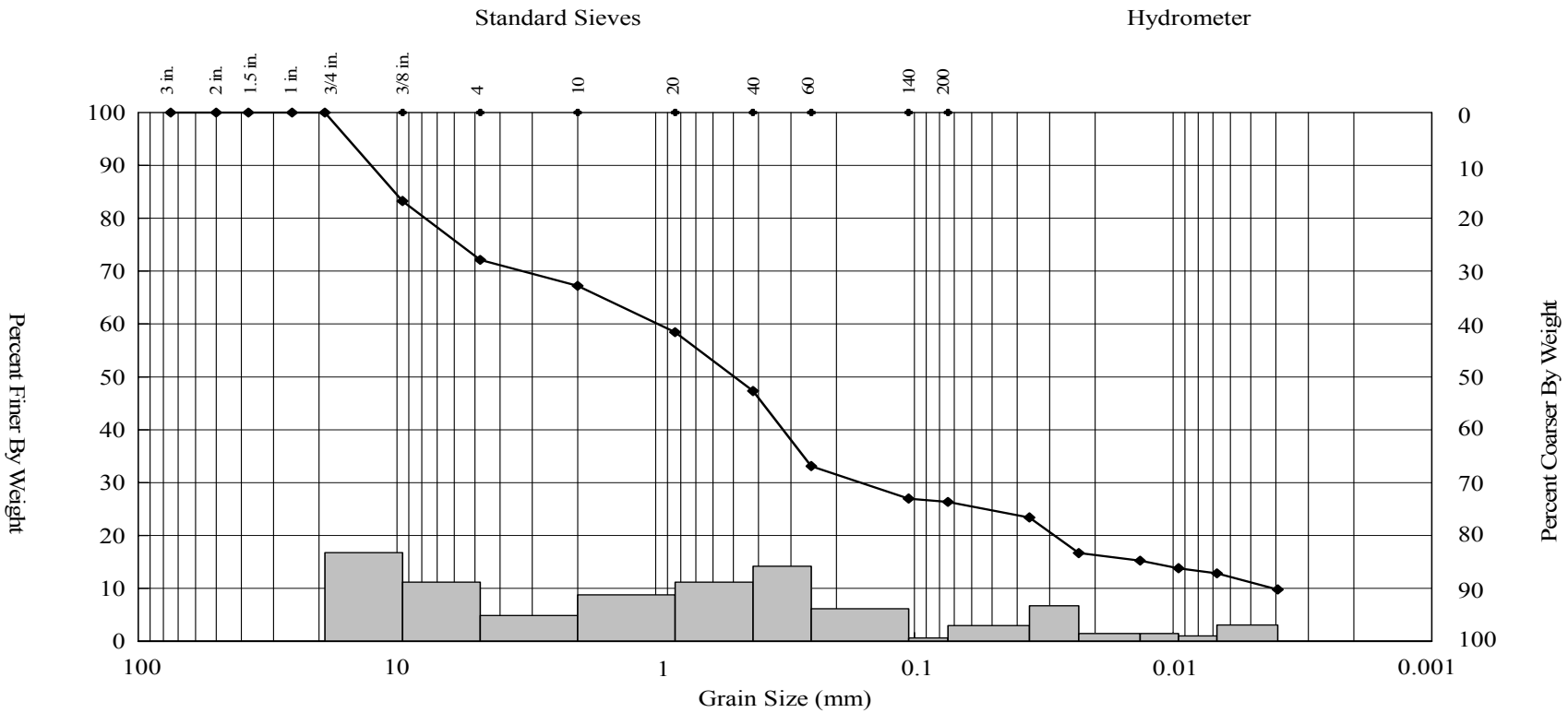
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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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 L.S. Moore
AMS, Inc. Project Manager

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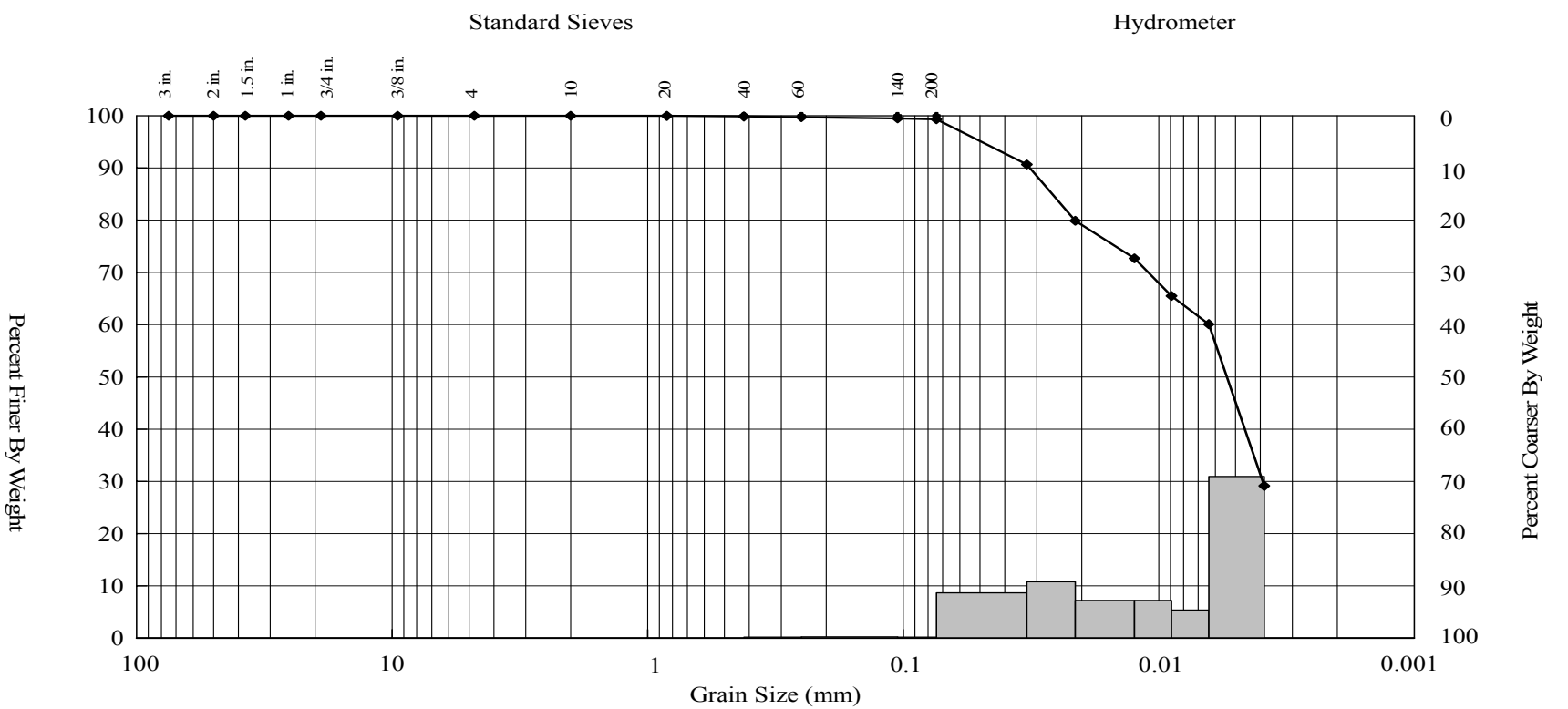
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.15	0.53	56.08	43.24

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)

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 0'-1'
AMS Sample ID:	8C8-17

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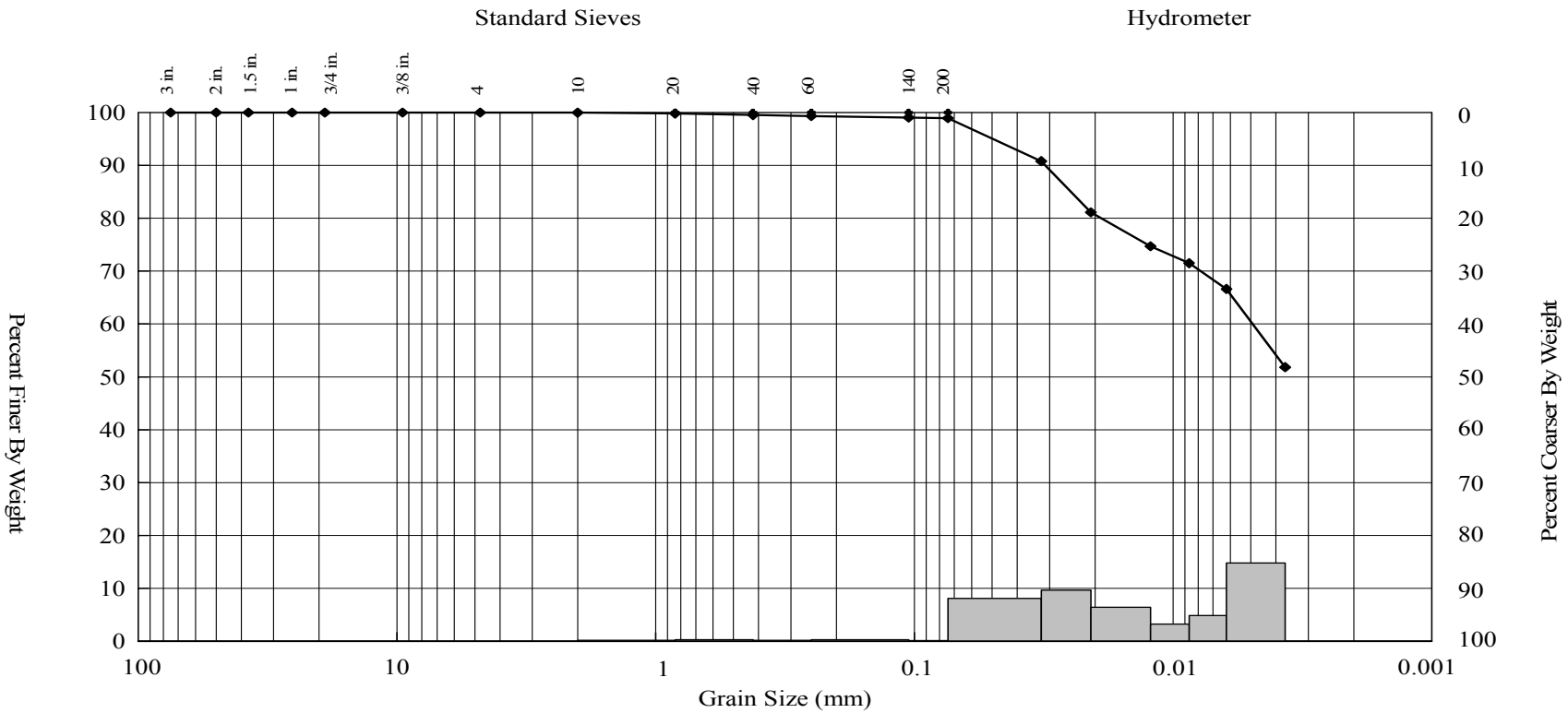
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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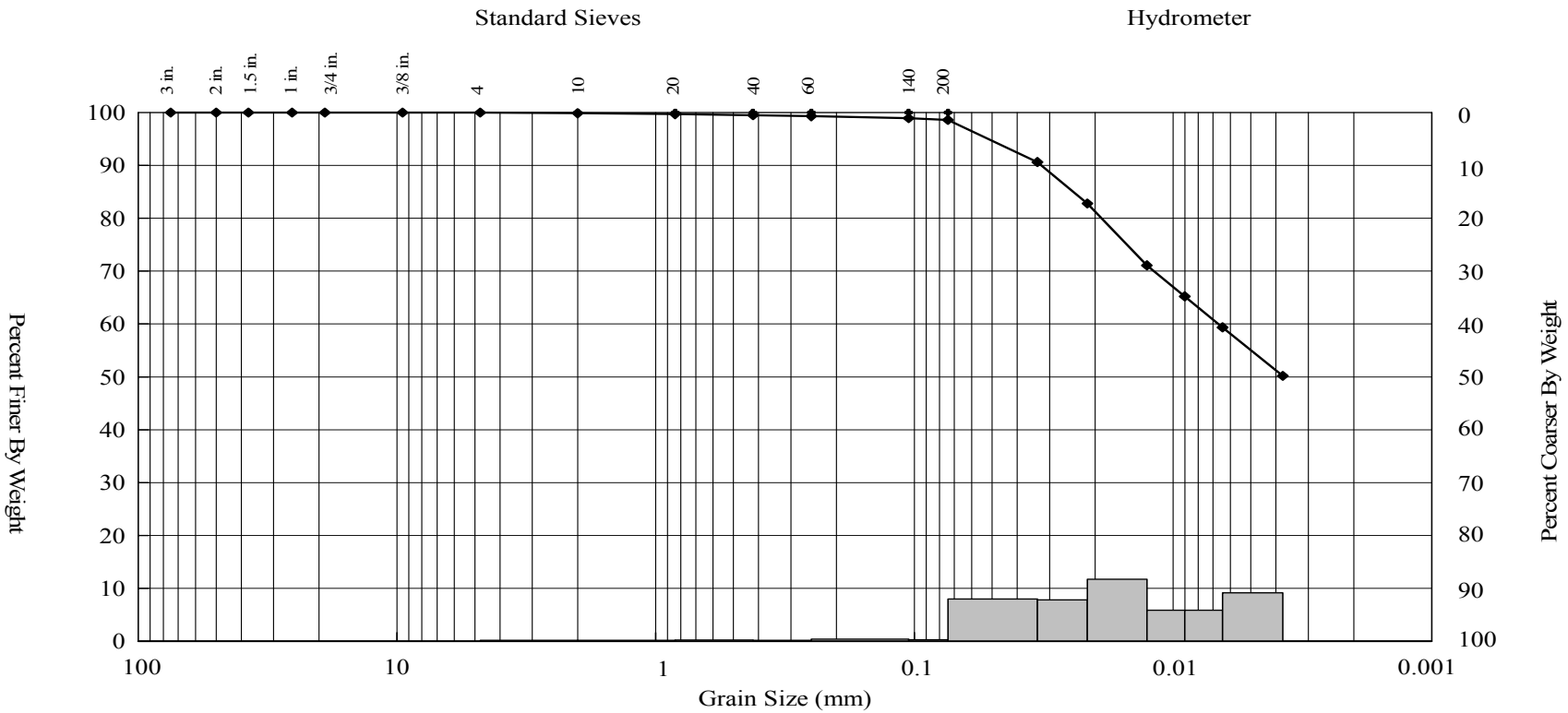
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.16	0.37	0.87	44.15	54.45

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)

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-003 0'-1'
AMS Sample ID:	8C8-19

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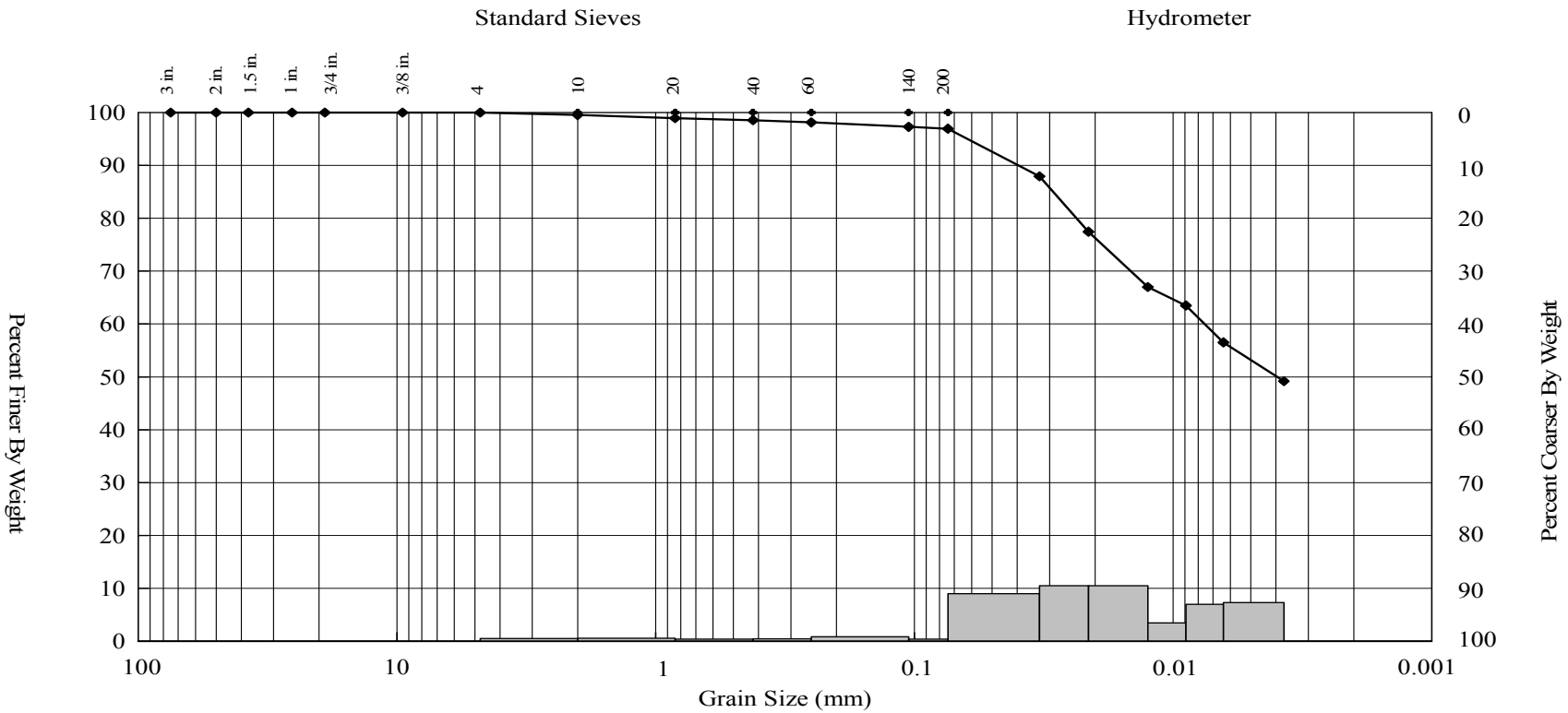
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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	C_u
123										

Material Description

Lean Clay ("CL"), dark greenish gray (10Y 4/1)

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-003 1'-2'
AMS Sample ID:	8C8-20

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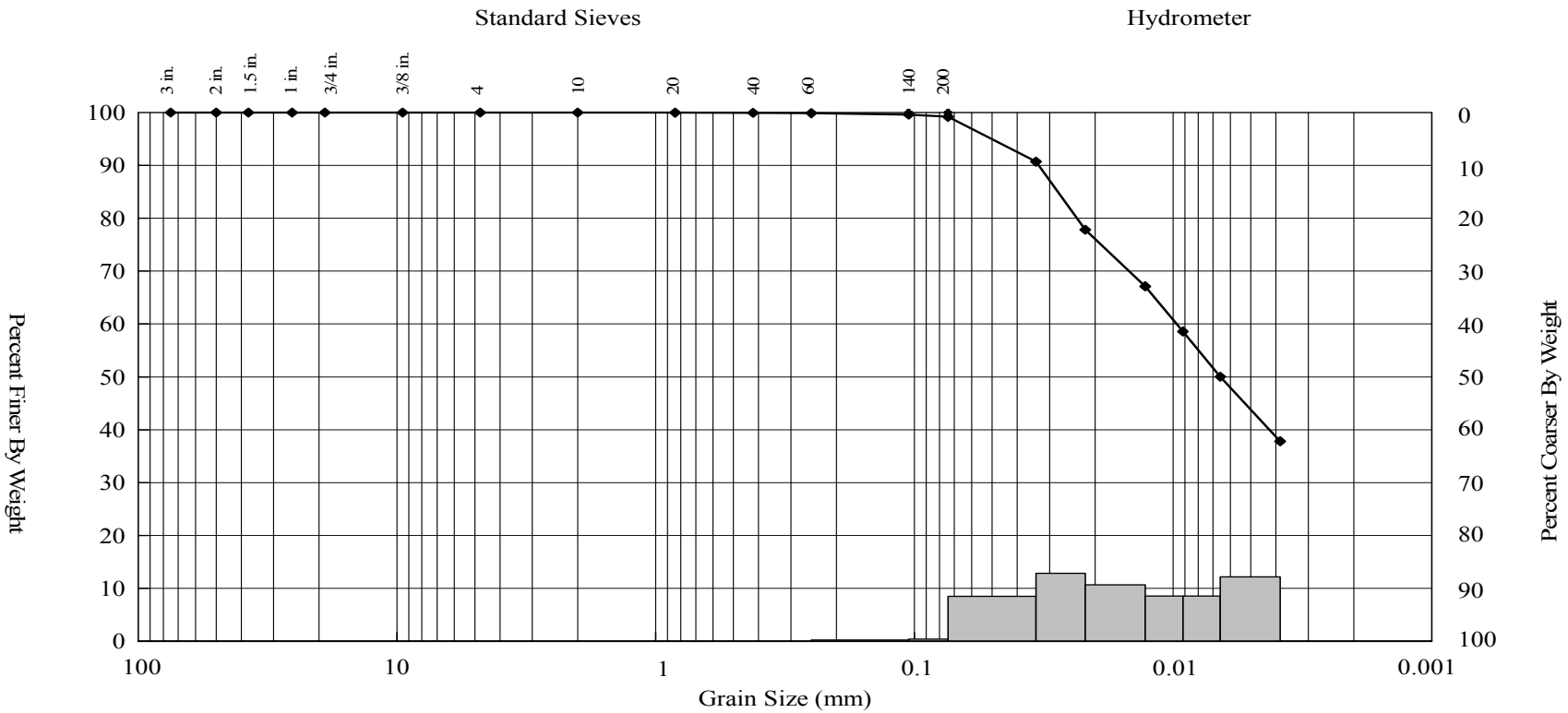
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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 0-1.9'
AMS Sample ID:	8C8-21

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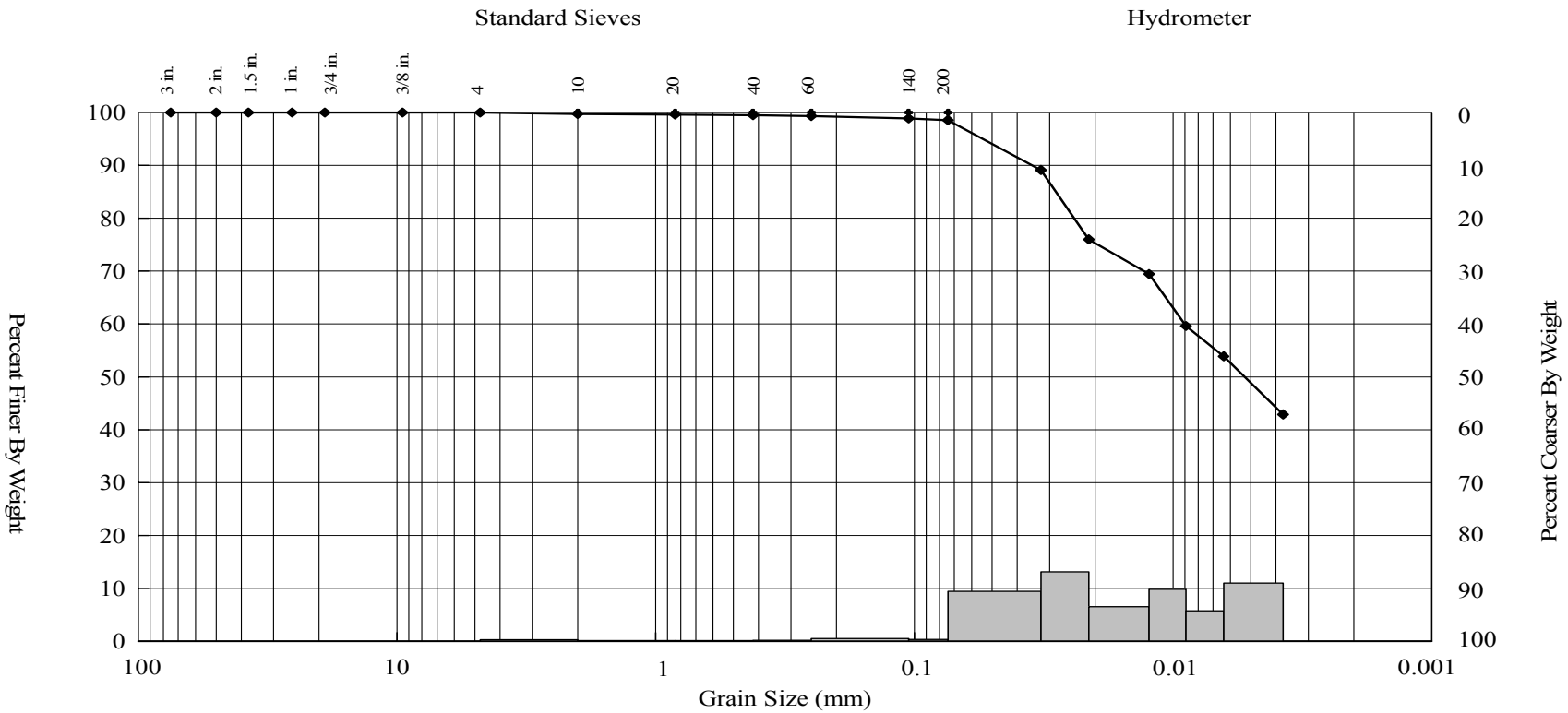
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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

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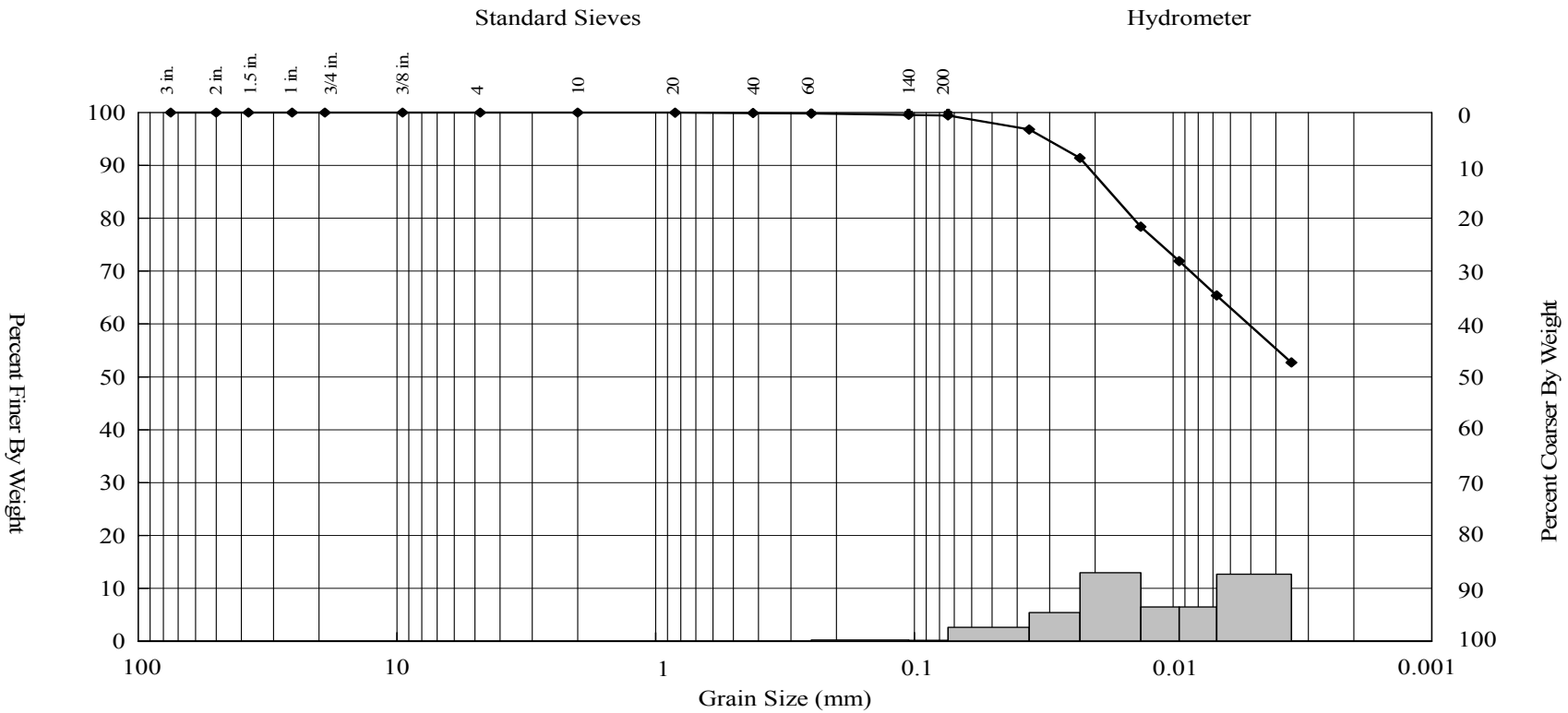
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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)

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 3.6'-7.3'
AMS Sample ID:	8C8-23

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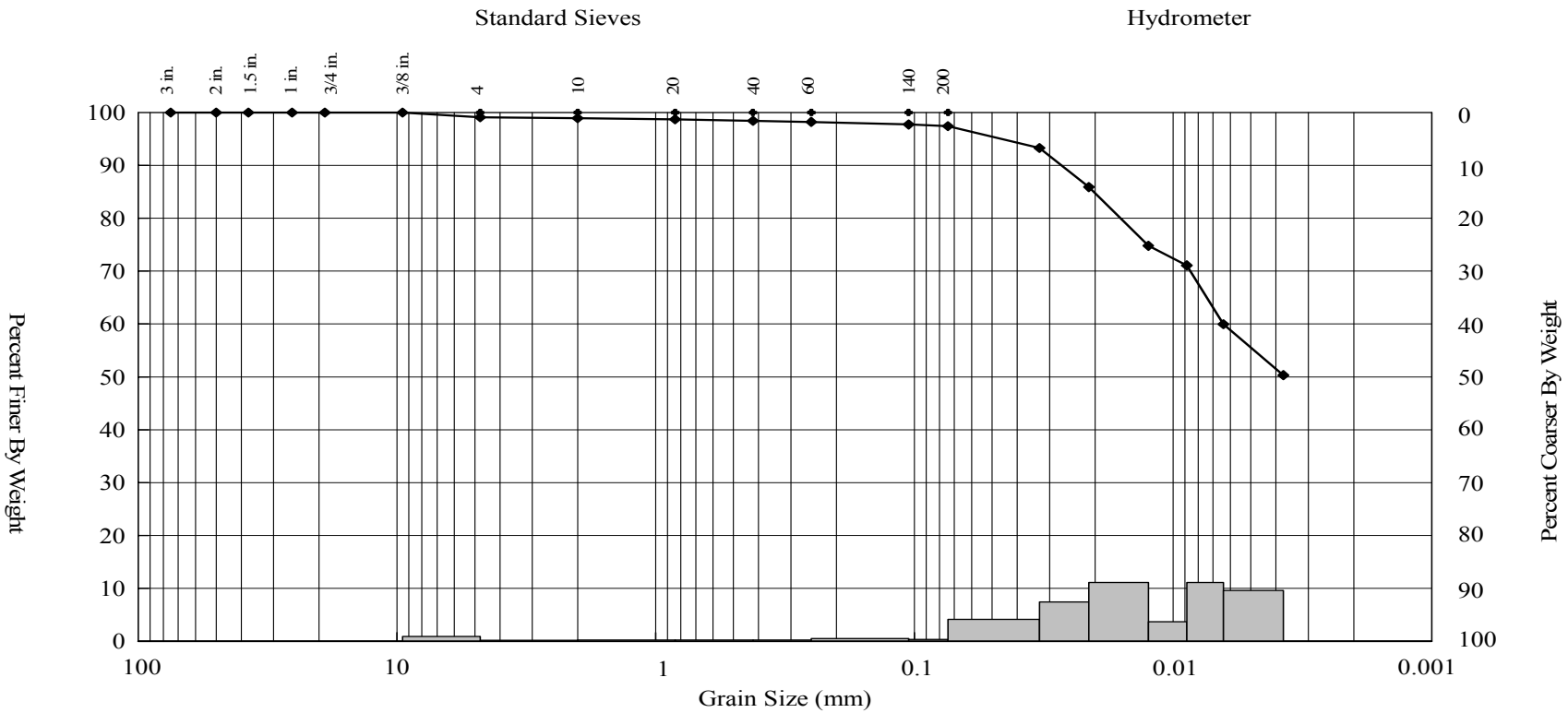
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.90	0.17	0.51	1.00	42.48	54.94

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
126										

Material Description

Lean Clay ("CL"), dark greenish gray (10Y 4/1)

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-002 0-1'
AMS Sample ID:	8C8-24

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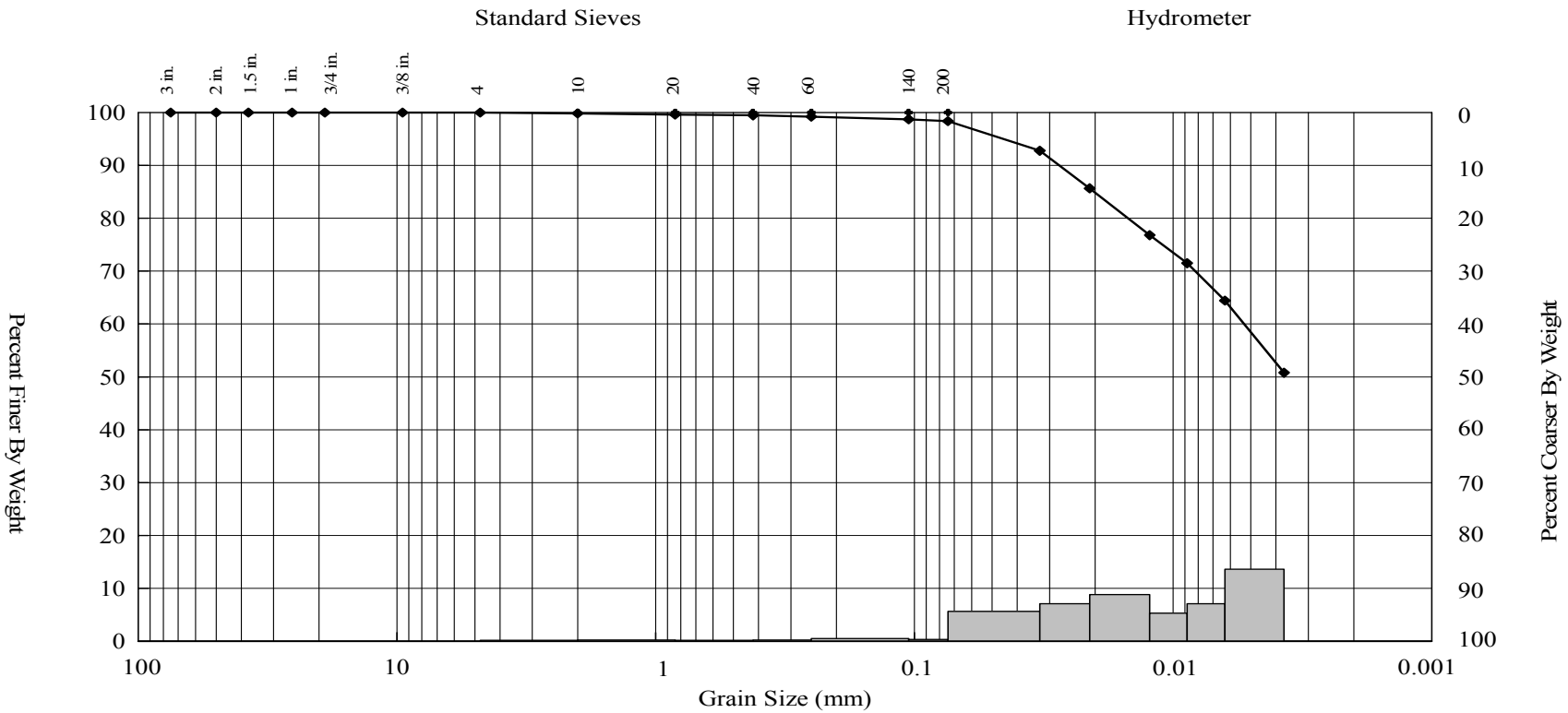

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.17	0.38	1.09	40.81	57.55

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
123										

Material Description

Lean Clay ("CL"), dark greenish gray (10Y 4/1)

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-002 1'-2'
AMS Sample ID:	8C8-25

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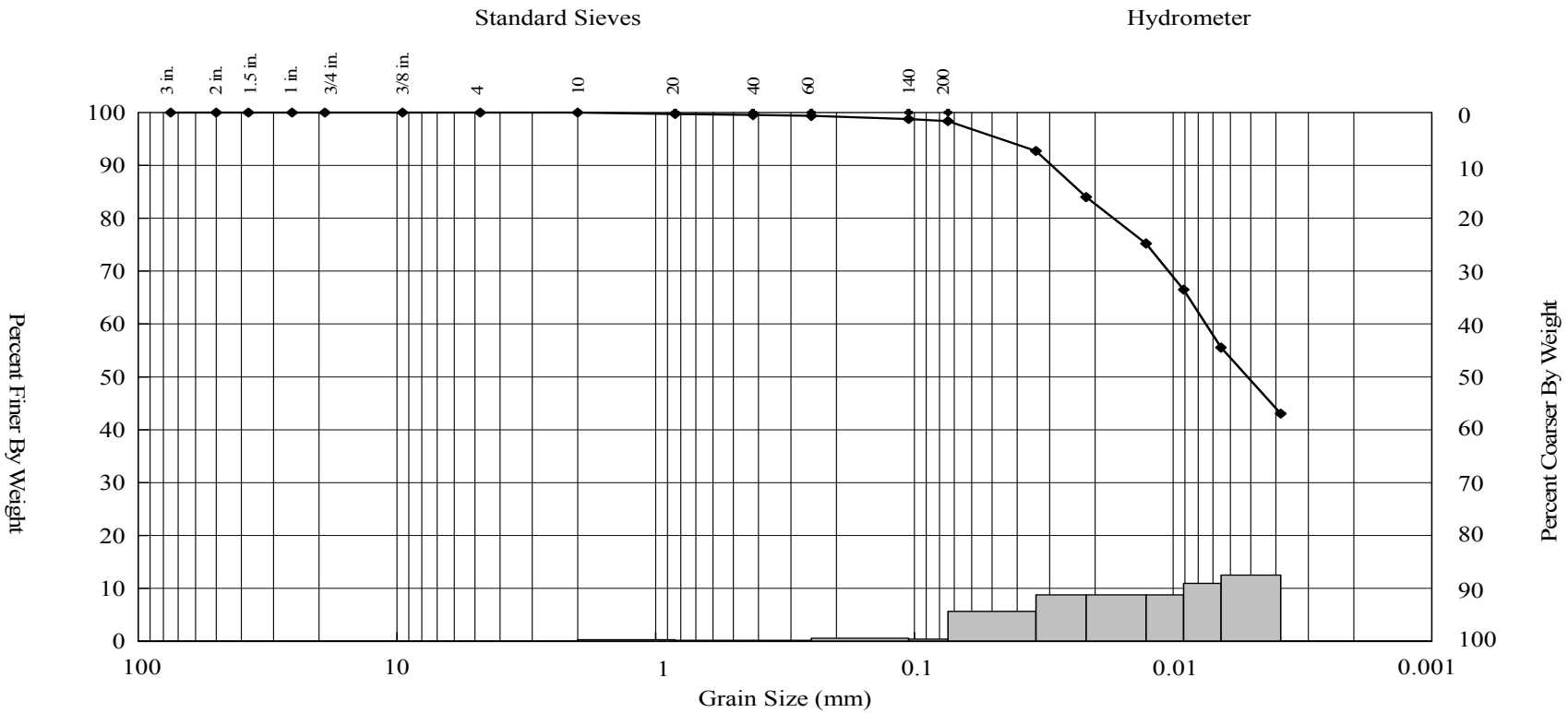
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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

Elastic Silt ("MH"), dark greenish gray (10Y 4/1)

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 0-1'
AMS Sample ID:	8C8-26

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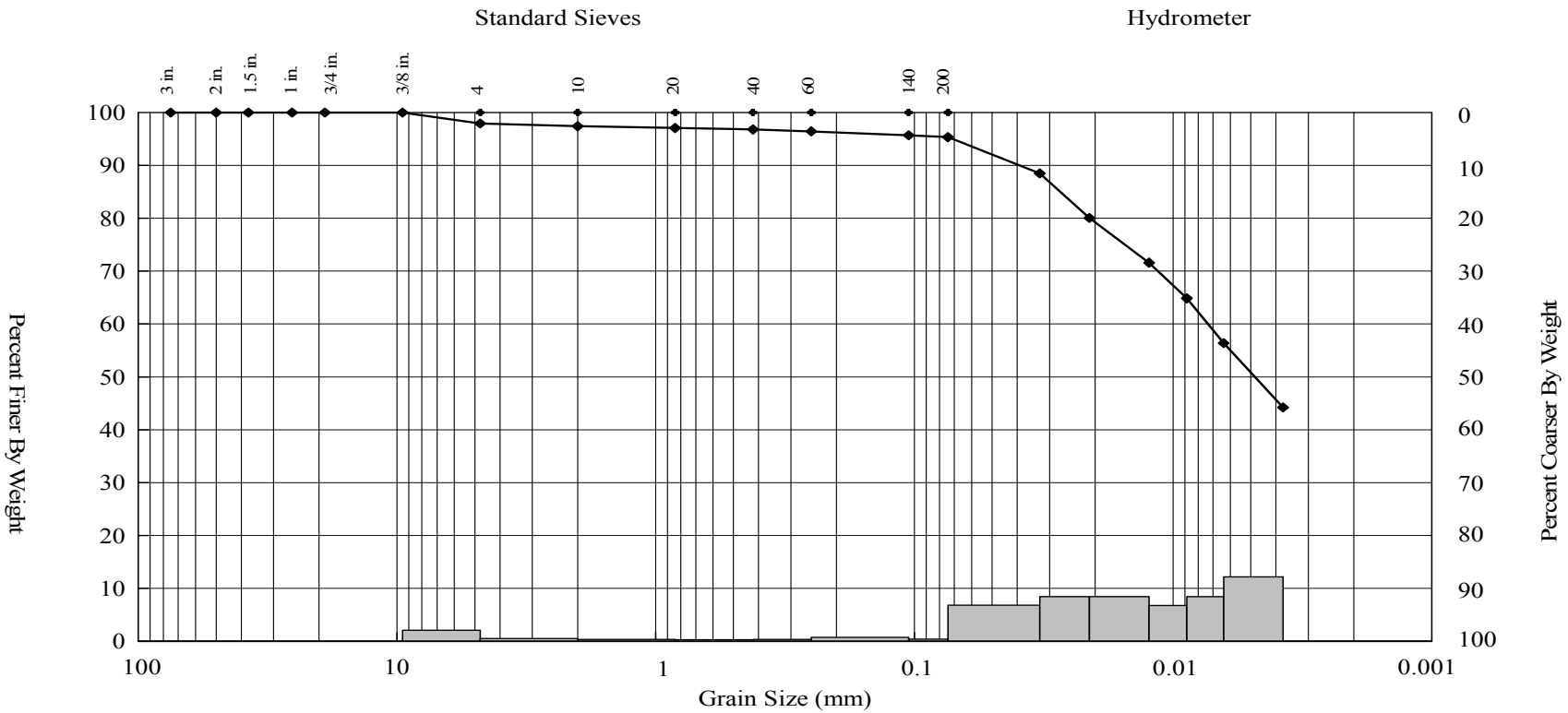

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
2.09	0.52	0.61	1.47	45.26	50.05

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)

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

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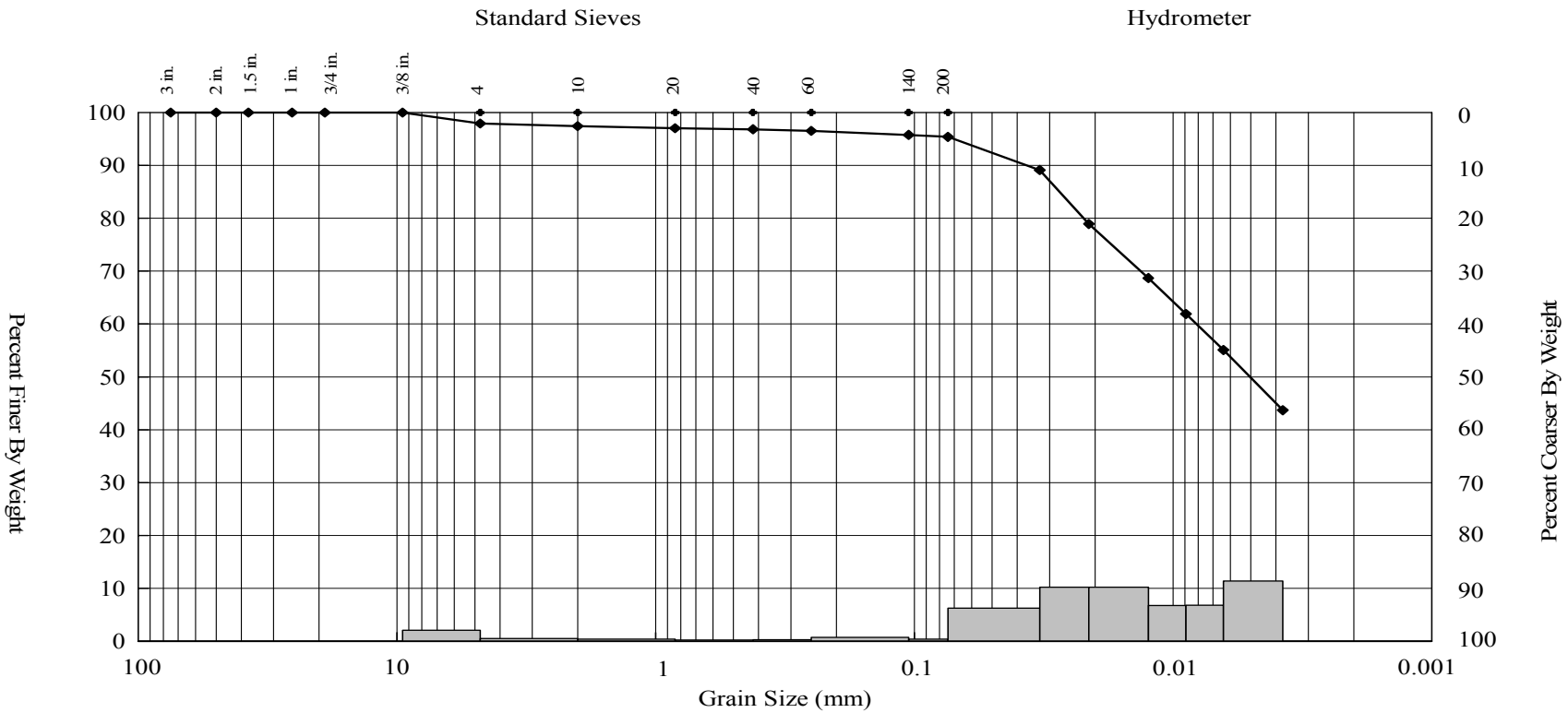
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	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	C_u
112										

Material Description

Lean Clay ("CL"), dark greenish gray (10Y 4/1)

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

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Title:	Searsport Harbor	Date Sampled:	4/30/2008
Project Number:	G606441	Date Analyzed:	5/8/2008
Client Sample ID:	HAC-004-1'-2'	Matrix:	Sediment
AMS Sample ID:	8C8-27	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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Laboratory No. E87956

Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-008 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-1		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-008 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-2		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-012	Matrix:	Sediment
AMS Sample ID:	8C8-3		

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

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Jennifer Davis
AMS, Inc. Technical Director

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

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

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-013	Matrix:	Sediment
AMS Sample ID:	8C8-4		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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:

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-014	Matrix:	Sediment
AMS Sample ID:	8C8-5		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-015	Matrix:	Sediment
AMS Sample ID:	8C8-6		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-016	Matrix:	Sediment
AMS Sample ID:	8C8-7		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-017	Matrix:	Sediment
AMS Sample ID:	8C8-8		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-005 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-9		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-005 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-10		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-007 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-11		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-007 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-12		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-009 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-13		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-009 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-14		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-010 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-15		

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

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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.

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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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-010 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-16		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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:

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-001 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-17		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/1/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-001 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-18		

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

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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

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-003 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-20		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-006 0-1.9'	Matrix:	Sediment
AMS Sample ID:	8C8-21		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-006 1.9-3.6'	Matrix:	Sediment
AMS Sample ID:	8C8-22		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-006 3.6-7.3'	Matrix:	Sediment
AMS Sample ID:	8C8-23		

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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/7/2008
Client Sample ID:	HAC-002 0-1'	Matrix:	Sediment
AMS Sample ID:	8C8-24		

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

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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

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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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

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	1/0/1900
Client Sample ID:	HAC-004 1-2'	Matrix:	Sediment
AMS Sample ID:	8C8-27		

Parameter	Result	Unit	Data Qualifier	MDL	LOD	Method	Date Analyzed
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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Laboratory No. E87956

Applied Marine Sciences, Inc.

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SPECIFIC GRAVITY QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Analyzed:	10/26/2007
Project Name:	Searsport Harbor	Batch ID:	052408-02S
Matrix:	Sediment		
Method:	ASTM D 854		

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
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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

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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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-012	Matrix:	Sediment
AMS Sample ID:	8C8-28		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-013	Matrix:	Sediment
AMS Sample ID:	8C8-29		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-014	Matrix:	Sediment
AMS Sample ID:	8C8-30		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

Jennifer Davis
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-015	Matrix:	Sediment
AMS Sample ID:	8C8-31		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-016	Matrix:	Sediment
AMS Sample ID:	8C8-32		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	5/2/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-017	Matrix:	Sediment
AMS Sample ID:	8C8-33		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-019	Matrix:	Sediment
AMS Sample ID:	8C8-34		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-020	Matrix:	Sediment
AMS Sample ID:	8C8-35		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C8
Project Number:	G606441	Date Sampled:	4/30/2008
Project Name:	Searsport Harbor	Date Received:	5/16/2008
Client Sample ID:	HAC-021	Matrix:	Sediment
AMS Sample ID:	8C8-36		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Date Analyzed
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	AMS Project Number:	8C8
Project Number:	G606441	Date Analyzed:	5/22/2008
Project Name:	Searsport Harbor	Batch ID:	052208-01
Matrix:	Sediment		
Method:	EPA 9060A		

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
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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

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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.

Batch	Extraction Date	Analysis Date
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 – 1out 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.

Battelle
The Business of Innovation

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

Battelle
The Business of Innovation

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
J = analyte detected below RL
N = outside QC limits

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The Business of Innovation

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

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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

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

	080328-01: Nist SRM						
Client ID	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		Certified		Passing	Actual	
Units	UG/KG_DRY		Value	+/-	%Difference	%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

Battelle
The Business of Innovation

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

Battelle
The Business of Innovation

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		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

Battelle
The Business of Innovation

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.

Batch	Extraction Date	Analysis Date
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

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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

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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

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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 (± 20% D)	Yes		In Data Package
Standard Reference Materials	+/- 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 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%)	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.

Batch	Extraction Date	Analysis Date
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 ≤ 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 ≤ 25% for individual analytes, with a mean PD ≤ 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 ≤ 25%.

08-0150 – No initial calibration exceedences noted.
No ICC exceedences noted.
No CCV exceedences noted.

Comments – All calibration criteria have been met.

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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

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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

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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	

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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	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

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

	080328-01: Nist SRM					
Client ID	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

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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			

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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

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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.

Batch	Extraction Date	Analysis Date
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 ≤ 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 ≤ 25% for individual analytes, with a mean PD ≤ 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 ≤ 25%.

08-0120 – No calibration exceedences noted.

Comments - None

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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

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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	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	2.2	J
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
Acenaphthene-d10	76
Phenanthrene-d10	81
Benzo(a)pyrene-d12	67

Battelle
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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	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 critiera 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
(360) 681-4564

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:

Amy a Kiel for JMB — 6/20/2008

Jill M. Brandenberger — Date
MSL Metals Chemistry Project Manager

Christyna Jones for JMC — 6/20/08

Janet Cloutier — Date
MSL QA Officer

BATTELLE MARINE SCIENCES LABORATORIES
Jill Brandenberger, Project Manager
1529 West Sequim Bay Rd.
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 Date	Percent Moisture	As	Cd	Cr	Cu	Ni	Pb	Zn	Hg
				Instrument:	*ICP-MS*	*ICP-MS*	*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 Date	Percent Moisture	As	Cd	Cr	Cu	Ni	Pb	Zn	Hg
				Instrument:	*ICP-MS*	*ICP-MS*	*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
DUPLICATE PRECISION												
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%**
STANDARD REFERENCE MATERIAL												
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

(concentrations in µg/L)

Sponsor ID	MSL Code	Site Description	Collection Date	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
Procedural Blank											
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
Laboratory Control Sample											
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%**
STANDARD REFERENCE MATERIAL											
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 <5x 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	< 5x MDL or < RL
SRM	Percent Difference ≤25% of certified values, if > 10x MDL
MS/LCS	75 –125 % Recovery
DUPS	MS/MSD <30% between recoveries; sample duplicate <30% between values

Accronyms:

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 130ºC (±10ºC) for a minimum of eight hours. After heating and cooling, deionized

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: 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.

MATRIX SPIKE ACCURACY: 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.

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: 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	NED Reporting Limits (µg/L)	Lab Detection Limits (µg/L)[2]	Lab Reporting Limits (µg/L)[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

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 $\geq$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	±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?	Yes (see Section 2.3.5 of data report).
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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